UNITED STATES DEPARTMENT OF LABOR

U.S. Bureau of Labor Statistics

BUREAU OF LABOR STATISTICS

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MONTHLY LABOR REVIEW

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This Issue in Brief

Earnings of residents of Negro housing projects in Atlanta

Negro families living in two housing projects in Atlanta had increases in their income from 1940 to 1944 amounting to about 65 percent. For individuals the income received increased on the average almost 95 percent. This improvement reflected better employment opportunities as well as the general rise in wage rates and longer working hours that took place during the war period. Page 1061.

Work and wage experience of Willow Run workers

In a sample study of workers at the Willow Run bomber plant, made by the U. S. Bureau of Labor Statistics, 4 of every 10 were women. Nearly a fourth of the men but less than 10 percent of the women were 50 years of age or over. Formal education was more extensive among men than among women; workers under 45 had had more schooling than those over 45. However, very few had gone to trade schools. Nearly two-thirds of the workers were heads of families with one or more dependents. Since the beginning of the war about 20 percent had migrated to Michigan, some from over 500 miles away. Farms, factories, professions, and the service trades had provided employment for most of the workers before the war; a small group consisted of new entrants into the labor market. Page 1074.

First conference of UNO on food and agriculture

At the first meeting of the United Nations Conference on Food and Agriculture, held at Quebec in October 1945, 42 nations joined the organization as full members. The Conference agreed on a program of international cooperation to improve agricultural production and better the food situation of the United Nations. It recommended that each government develop a national nutritional organization to report periodically to the FAO on progress in the field of nutrition, and to make recommendations to its government; also that the FAO should participate in the preparation, negotiation, and administration of any international agreements concerning foreign trade in agricultural products. Page 1091.

Postwar outlook for physicians

Conservatively estimated postwar demand for physicians' services is expected to exceed, by at least 10,500, the number of physicians who will be available, and the shortage may reach 19,500 or more. Many States which lost physicians during the past 3 decades will have a particular need for additional doctors. Page 1094.

Employment opportunities in foundry occupations

Forecasts of foundry employment, based upon an analysis of trends in castings production and technology, indicate a relatively favorable outlook for this important branch of metalworking. In the 1946–47 period, the employment of production workers in all classes of foundries is expected to average between 365,000 and 400,000, compared to the estimated employment of 375,000 in July 1945. Although below the 1944 peak of approximately 425,000 workers, the forecast represents a substantial increase over the 1939 level. However, this increase is unequally distributed among the various types of foundries. Page 1112.

Productivity changes in shipbuilding programs

During the war, mass production of merchant and naval vessels of standardized types, together with prefabrication of components, enabled shipyards to make substantial reductions in average time and labor requirements per ship. Liberty ships delivered in December 1944 required only 45 percent of the man-hours and 20 percent of the time required for the first deliveries, made 3 years earlier; man-

hour and time requirements for Victory ships declined 50 and 18 percent, respectively, between February and December 1944; and labor requirements for destroyer escorts decreased 45 percent from April 1943 to January 1944. Declines for tankers and cargo vessels of selected types were less pronounced. For individual yards, labor requirements per vessel declined from 10 to 26 percent each time production doubled. Page 1132.

Employment under British Distribution of Industry Act

Soon after the British Distribution of Industry Act became law, in 1945, the Board of Trade announced its intention of extending employment in the areas of chronic unemployment that are to benefit under its terms. The plan formulated thus far provides for the employment of more than 100,000 persons and forms an important step in the application of the law which is intended to bring about a proper distribution of industry by stimulating industrial and social development in areas in which a special danger of unemployment exists. Page 1148.

Causes of accident in meat-packing industry, 1943

Analysis by the Bureau of Labor Statistics of nearly 5,300 disabling injuries to workers in the slaughtering and meat-packing industry in 1943 indicates that 37 percent were injuries to the hand or finger, 15 percent to the foot or toe, and 11 percent to the back. An important source of injury was poor housekeeping conditions—slippery working surfaces and tools or materials unsafely placed. Among unsafe acts by the workers, the most outstanding was gripping objects insecurely or taking a wrong hold on them. Page 1153.

Earnings on tugboats and barges in New York Harbor, January 1945

Union hourly wage rates on tugboats in New York Harbor in January 1945 ranged from $1.10 to $1.42 for captains (the highest-paid job) and from 67 to 89 cents for deckhands (the lowest paid). On barges and scows, union rates for captain (the only occupation, unskilled) ranged from 43 to 98 cents an hour. Average straight-time hourly earnings were about 5 cents higher than the union rate for most occupations on tugboats. The large amount of overtime, doubling up of jobs, and payment of special bonuses were reflected in the relatively high biweekly gross earnings for January 16–31, ranging from $160 to $246 for captains on tugboats and from $74 to $121 for deckhands. Page 1192.

Prices in the third quarter of 1945

Although no new market trends appeared during the third quarter of 1945, the movements which had begun with the German surrender in May were accelerated after the Japanese surrender in August. Cut-backs of 24 billion dollars in war production resulted in a 32-percent drop in durable-goods production. Retail sales, on the other hand, recovered rapidly from the VJ–day slump and continued high to the end of the quarter. WPB controls over production and distribution were relaxed, but price controls generally were maintained. Prices for nonagricultural commodities were generally higher, but the sharp drop in agricultural commodity prices was sufficient to lower the wholesale price index by 0.8 percent and the consumers' price index by 0.1 percent. Page 1204.

Current Statistics of Labor Interest in Selected Periods [1]

[Available in reprint form]

Item	Unit or base period	1945			1944	1939: Average for year
		October	September	August	October	
Employment and unemployment						
Civilian labor force (BC): Total	Thousands	53,360	52,900	54,350	[2] 52,870	[3] 54,230
Male	do	34,840	34,250	35,020	[2] 34,410	[3] 40,950
Female	do	18,520	18,650	19,330	[2] 18,460	[3] 13,280
Employed [4]	do	51,860	51,250	53,520	[2] 52,240	[3] 46,930
Male	do	33,960	33,320	34,590	[2] 34,100	[3] 35,600
Female	do	17,900	17,930	18,930	[2] 18,140	[3] 11,330
Nonagricultural	do	42,990	42,450	44,470	[2] 43,490	[3] 37,430
Agricultural	do	8,870	8,800	9,050	[2] 8,750	[3] 9,500
Unemployed	do	1,500	1,650	830	[2] 630	[3] 7,300
Civilian employment in nonagricultural establishments: Total: [4]	do	34,908	35,344	37,015	38,360	30,353
Manufacturing	do	11,960	12,132	13,862	15,692	10,078
Mining	do	687	784	784	816	845
Construction [5]	do	975	948	927	652	1,753
Transportation and public utilities.	do	3,824	3,831	3,860	3,767	2,912
Trade	do	7,317	7,136	6,979	7,148	6,618
Finance, service, and miscellaneous.	do	4,444	4,578	4,666	4,340	4,160
Federal, State, and local government, excluding Federal force-account construction.	do	5,701	5,935	5,937	5,945	3,988
Military personnel	do	11,500	12,100	12,200	11,900	362
Production-worker employment: [6]						
Manufacturing	do	9,958	10,093	11,670	13,440	8,192
Bituminous-coal mining	do	238	325	323	342	371
Class I steam railroads, including salaried employees (ICC).	do	1,397	1,414	1,449	1,410	988
Hired farm workers (BAE)	do	2,494	2,813	2,642	2,911	[7] 3,280
Hours and earnings						
Average weekly hours:						
Manufacturing	Hours	----------	41.4	40.7	[8] 44.8	37.7
Bituminous-coal mining	do	----------	42.3	40.1	[8] 42.0	27.1
Retail trade	do	----------	40.7	41.2	[8] 40.4	43.0
Building construction (private)	do	39.8	38.1	40.3	40.7	32.4
Average weekly earnings:						
Manufacturing	----------	----------	$40.88	$41.75	[8] $46.24	$23.86
Bituminous-coal mining	----------	----------	$52.73	$49.90	[8] $50.80	$23.88
Retail trade	----------	----------	$28.95	$29.01	[8] $27.09	$21.17
Building construction (private)	----------	$55.09	$53.11	$55.79	$54.62	$30.24
Average hourly earnings:						
Manufacturing	----------	----------	$0.988	$1.025	[8] $1.032	$0.633
Bituminous-coal mining	----------	----------	$1.252	$1.249	[8] $1.213	$0.886
Retail trade	----------	----------	$0.780	$0.772	[8] $0.736	$0.536
Building construction (private)	----------	$1.384	$1.392	$1.383	$1.342	$0.933
Average straight-time hourly earnings in manufacturing, using—						
Current employment by industry	----------	----------	----------	(9)	[8] $0.962	$0.622
Employment by industry as of January 1941.	----------	----------	----------	(9)	[8] $0.914	$0.640
Quarterly farm wage rate, per day without board (BAE).	----------	$4.39	----------	----------	$4.08	[7] $1.57
Industrial injuries and labor turn-over						
Industrial injuries in manufacturing, per million man-hours worked.	----------	----------	18.3	17.4	[8] 18.2	15.4
Labor turn-over per 100 employees in manufacturing:						
Total separations	----------	8.7	12.0	17.9	6.4	[7] 2.9
Quits	----------	5.6	6.7	6.2	5.0	[7] 0.9
Lay-offs	----------	2.3	4.5	10.7	0.5	[7] 1.8
Total accessions	----------	8.6	7.4	5.9	6.0	[7] 5.9
Strikes and lock-outs						
Strikes and lock-outs beginning in month:						
Number	----------	455	550	410	430	218
Number of workers involved	Thousands	560	455	220	222	98
All strikes and lock-outs during month:						
Number of man-days idle	do	7,800	3,650	1,350	756	1,484
Man-days idle as percent of available working time.	----------	1.27	0.61	0.19	0.10	0.28

See footnotes at end of table.

Current Statistics of Labor Interest in Selected Periods [1]—Continued

Item	Unit or base period	1945			1944	1939: Average for year
		October	September	August	October	
Prices						
Consumers' price index (moderate income families in large cities): All items.[10]	1935–39=100	128.9	128.9	129.3	126.5	99.4
Food	1935–39=100	139.3	139.4	140.9	136.4	95.2
Clothing	1935–39=100	148.3	148.2	146.4	141.9	100.5
Rent	1935–39=100		108.3			104.3
Fuel, electricity, and ice	1935–39=100	110.6	110.7	111.4	109.8	99.0
Housefurnishings	1935–39=100	146.6	146.8	146.0	141.4	101.3
Miscellaneous	1935–39=100	124.5	124.6	124.5	122.8	100.7
Retail food price index (large cities):						
All foods	1935–39=100	139.3	139.4	140.9	136.4	95.2
Cereals and bakery products	1935–39=100	109.1	109.1	109.1	108.6	94.5
Meats	1935–39=100	131.0	131.6	131.8	129.4	96.6
Dairy products	1935–39=100	133.3	133.4	133.4	133.6	95.9
Eggs	1935–39=100	185.5	183.9	171.4	179.0	91.0
Fruits and vegetables	1935–39=100	172.5	172.5	183.5	162.9	94.5
Beverages	1935–39=100	124.7	124.7	124.7	124.3	95.5
Fats and oils	1935–39=100	124.0	124.1	124.0	123.1	87.7
Sugar and sweets	1935–39=100	126.5	126.5	126.6	126.4	100.6
Wholesale price index: All commodities.	1926=100	105.9	105.2	105.7	104.1	77.1
All commodities other than farm products.	1926=100	101.0	100.9	100.9	99.8	79.5
All commodities other than farm products and foods.	1926=100	100.1	99.8	99.9	98.7	81.3
Farm products	1926=100	127.3	124.3	126.9	123.4	65.3
Foods	1926=100	105.7	104.9	106.4	104.2	70.4
National income and expenditures						
National income payments (BFDC)	Millions	$13,566	$13,424	$12,674	$13,684	[7] $6,327
Consumer expenditures for goods and services (BFDC).	do	[11] $25,335			[11] $24,499	[11] $15,350
Retail sales (BFDC)	do	$6,935	$6,202	$6,086	$6,179	[7] $3,748
Production						
Industrial production index, unadjusted (FR): Total.	1935–39=100	166	174	189	234	109
Manufactures	1935–39=100	175	181	197	250	109
Minerals	1935–39=100	121	136	143	144	106
Bituminous coal (BM)	Thousands of short tons.	38,580	46,800	47,620	51,813	32,905
Carloadings index, unadjusted (FR)	1935–39=100	128	137	132	148	101
Electric energy (FPC): Total	Millions of kw.-hrs.	21,463	20,718	22,606	23,366	(9)
Utilities (production for public use).	do	17,650	17,008	18,625	19,027	[7] 11,637
Industrial establishments	do	3,813	3,710	3,981	4,339	(9)
Construction						
Construction expenditures	Millions	$595	$556	$558	$409	[7] $631
Value of urban building construction started.	do	$262	$192	$173	$99	(9)
New nonfarm family-dwelling units		29,800	21,500	20,200	10,800	[7] 42,900

[1] Source: Bureau of Labor Statistics unless otherwise indicated. Abbreviations used: BC (Bureau of the Census); ICC (Interstate Commerce Commission); BAE (Bureau of Agricultural Economics); BFDC (Bureau of Foreign and Domestic Commerce); FR (Federal Reserve); BM (Bureau of Mines); FPC (Federal Power Commission). Most of the current figures are preliminary.

[2] Not comparable with August, September, and October 1945 figures due to a change adopted by the Bureau of the Census in July 1945 in sampling methods. (See Monthly Report on the Labor Force, September 1945.) Estimates for months prior to July 1945 are being revised.

[3] 10-month average—March to December 1940. (See footnote 2.)

[4] Excludes employees on public emergency work, these being included in unemployed civilian labor force. Civilian employment in nonagricultural establishments differs from employment in civlian labor force mainly because of such groups as self-employed and domestic and casual workers.

[5] Includes workers employed by construction contractors and Federal force-account workers (nonmaintenance construction workers employed directly by the Federal Government). Other force-account nonmaintenance construction employment is included under manufacturing and the other groups.

[6] Reports in manufacturing and mining now relate to "production workers" instead of "wage earners" but with no appreciable effect on the employment estimates.

[7] October.

[8] September.

[9] Not available.

[10] For the coverage of this index see p. 1222. Formerly listed as "cost-of-living index."

[11] Third quarter.

MONTHLY LABOR REVIEW

DECEMBER 1945

Annual Family and Occupational Earnings of Residents of Two Negro Housing Projects in Atlanta, 1937–44[1]

Summary

THE average family income of the residents of the University and John Hope Homes, Negro divisions of the Atlanta Housing Authority, rose about 65 percent from 1940 to 1944. During the same period the average income per income receiver increased almost 95 percent. The general rise in wage rates and weekly hours characteristic of the war years, as well as improved employment opportunities in the Atlanta area, contributed to these increases. The rise in family incomes was accomplished despite a drop of about 15 percent in the average number of income receivers per family. In fact, as the income of the chief earner increased, there was a definite tendency for wives to withdraw from the labor force. In addition, at least 15 percent of the families studied suffered reductions in income because of the drafting of male members, usually the principal wage earners, into the armed services. Allotments were substantial in some cases but generally did not replace the income previously contributed by those going into the Army. These estimates and conclusions are based upon an intensive analysis of the income-earnings data contained in the rental applications of the tenants of the Homes, recently made by the Atlanta Regional Office of the Bureau of Labor Statistics.

Background and Scope of Study

University Homes, which was the first major Public Works Administration housing project built for the exclusive use of Negro families, was opened for occupancy in April 1937. The Atlanta Housing Authority assumed control over University Homes in 1940 and it is now operated jointly under one management with the adjoining John Hope Homes, opened in September 1940 and the first of the four Negro housing projects built by the Housing Authority.[2] Together the two projects occupy 54 acres near the campus of the Atlanta University and provide apartments for 1,281 families.

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[1] Prepared by Alan L. Ritter, wage analyst in the Bureau's regional office at Atlanta. The study was suggested by Alonzo G. Morón, director of the Homes until October 1944, who also assisted in the supervision of the study in its early stages. The Bureau of Labor Statistics also wishes to express its appreciation to the Atlanta Housing Authority, whose cooperation made this study possible.

[2] The Atlanta Housing Authority also operates three projects for the white population of the city.

The apartments are designed for family use, and no provision is made for single occupancy.[3] The management prefers that the family unit consist of husband and wife or parents and children, although some families have included other close relatives, such as sisters or grandchildren. Apartments are assigned, by size, on the basis of the number of persons in the family. The rental of an apartment is based upon the number of rooms and upon the income of the family occupying it, the family income being the more important factor. Thus a 2-person family with a high income may pay more rent than a 4-person family with a lower income. Minimum and maximum rentals have been established and, although the rentals of some families with low incomes are partly subsidized, no tenant is accepted or permitted to remain unless he has a definite and regular income. Prior to the war tenants whose incomes exceeded a certain amount were requested to vacate, but this ruling was suspended after the rent regulations of the OPA went into effect. Study of the tenants' files indicates that only a very few families left the Homes, during the prewar period, because of excessive incomes.[4]

The leases are arranged and the rentals are determined annually, on the basis of information furnished to the management each year.[5] Among other information, these applications show the name, age, and employment status of each family member, as well as the relationship of each to the "tenant," or head of the family. The current rate of earnings and the total income for the previous year of the tenant and all other employed members of the family are used to estimate the combined rent grade of the family unit. In a few instances the annual incomes reported in the applications and used in this study were estimates, projected from the reported weekly or hourly rates, but very large proportions, at least in recent years, have been verified. Requests are sent to all employers listed by the applicants, who may be expected to maintain records of wage payments, asking for statements of the previous year's earnings of the employees concerned; and similar information is obtained from private employers who are willing to provide it.[6]

The information regarding annual family income and annual income of individuals, by occupation, and information concerning family size have been used by the Bureau of Labor Statistics in the preparation of this report. It is felt that although the residents of the two Homes do not typify the southern Negro, they do constitute a representative cross section of the middle and lower-middle income classes among Atlanta Negroes. The availability and relative accuracy of these data have made them suitable for statistical analysis.

Annual Family Income

The average income of the families living in University Homes was $1,277 in 1943 and $1,398 in 1944, levels considerably above the incomes of earlier years. Average family incomes of the residents of

[3] During the past year a few wives of servicemen who were living in the Homes at the time their husbands went into the service have been permitted to remain, although in such cases preference is given to women with children.

[4] The fact that only a few families were required to leave the Homes because of excessive incomes eliminates the bias which would have occurred in the income data if incomes had been limited in the early years of the project but unlimited during more recent years.

[5] Vacancies which occur during the year are filled from a waiting list of approved applicants.

[6] Numerous irregular incomes were noted, as well as a number of cases in which there were variations in annual incomes among workers who were paid at the same weekly or hourly rates, indicating either part-time work or absenteeism.

the John Hope Homes were somewhat lower, $1,182 in 1943 and $1,297 in 1944.[7] The average family income of those living in University Homes during the first year of its operation was $990, but declined gradually each year thereafter to about $930 in 1940, before turning upward again. Earnings in a number of occupations declined during this period, although the elimination of some of the small earnings of part-time workers caused the average income per wage earner to rise slightly. Consequently, the drop in family incomes may be attributed to the combined effects of falling individual earnings and to a decline in the average number of income receivers [8] per

TABLE 1.—*Average Family Income of Tenants in University and John Hope Homes, by Number of Income Receivers and Size of Family, 1937–44*

Project and year	Total		1 income receiver		2 income receivers		3 income receivers		4 income receivers	
	Number of families	Average income	Number of families	Average income	Number of families	Average income	Number of families	Average income	Number of families	Average income
University Homes:										
1937	749	$990	342	$828	347	$1,089	56	$1,318	4	$1,380
1938	702	986	331	875	325	1,052	44	1,318	2	1,460
1939	709	952	361	842	311	1,036	36	1,319	1	1,260
1940	747	929	425	817	292	1,055	28	1,274	2	1,720
1941	704	949	466	861	214	1,090	24	1,395	------	------
1942	722	1,078	529	986	177	1,268	16	2,020	------	------
1943	637	1,277	508	1,196	124	1,559	5	2,460	------	------
1944	608	1,398	490	1,323	112	1,659	6	2,547	------	------
John Hope Homes:										
1940	610	721	443	685	161	807	6	1,053	------	------
1941	652	780	489	744	151	866	12	1,120	------	------
1942	666	945	513	910	145	1,049	8	1,240	------	------
1943	637	1,182	544	1,157	89	1,330	4	1,340	------	------
1944	596	1,297	518	1,258	76	1,531	2	2,480	------	------

Project and year	Size of family							
	2 persons		3 persons		4 persons		5 persons	
	Number of families	Average income	Number of families	Average income	Number of families	Average income	Number of families	Average income
University Homes:								
1937	253	$874	250	$1,007	126	$1,077	120	$1,093
1938	234	870	223	1,022	127	1,046	118	1,082
1939	253	840	212	999	137	1,014	107	1,046
1940	272	822	227	955	141	1,035	107	1,007
1941	255	896	214	940	136	1,018	99	1,010
1942	281	967	215	1,120	137	1,130	89	1,251
1943	250	1,149	190	1,305	119	1,350	78	1,517
1944	230	1,246	171	1,410	118	1,534	89	1,594
John Hope Homes:								
1940	194	682	193	710	136	756	87	775
1941	199	711	177	755	145	819	131	869
1942	220	873	169	928	143	947	134	1,084
1943	227	1,054	159	1,124	131	1,303	120	1,369
1944	188	1,139	147	1,231	123	1,369	138	1,518

[7] It was found necessary to report family earnings separately for the two Homes, rather than to combine them for the years both were in operation. Reference to the tables will indicate that the average earnings of the John Hope families have been lower each year than those of the families in University Homes, although the difference was not so great in 1943 and 1944 as in earlier years. In addition to the fact that the average number of income receivers per family has been lower in John Hope than in University, the earning capacity of the John Hope residents seems to have been lower (table 2). The fact that University Homes was built earlier may have enabled it to draw its tenants from among workers with slightly higher incomes.

[8] The term "income receivers" has been chosen to designate all persons who reported income, whether received as wages, gifts, pension, or, in later years, as allotments. All such incomes, when received regularly, are included in estimating the rent-paying grade of the family. Except for the allotments, as noted later, income from sources other than wages was negligible.

family. It is likely that the depressed business conditions in 1938–40 caused a reduction of opportunities for part-time employment of women and children. Family incomes in both housing projects have increased sharply since 1940, the increases in individual earnings having overbalanced a further decrease in the average number of income receivers per family.

Employment Status

As suggested above, there was a steady drop from 1937 to 1944 in the proportion of residents who reported incomes. During the prewar years this decline was at a low rate and appears to have resulted from the loss of opportunities for part-time employment and from the fact that decreases in the cost of living permitted a gradually increasing number of families to maintain a satisfactory standard of living without the supplementary earnings. Other factors were important during the war period, so that a number of employed and employable persons actually left the family groups living in the Homes. The draft and the higher wages paid in other areas combined to accelerate the movement of young Negro men and women away from Atlanta and the homes of their parents. In addition, during 1943 and 1944 a large number of husbands and fathers were taken into the Army, leaving the wives and mothers as the nominal "tenants," with allotments as their chief source of income. However, as those leaving the Homes were replaced by infants or relatives, there was no appreciable change in the average number of persons per family unit (table 2).[9] Nevertheless, it is apparent that the increasing ability of the chief wage earner to support the family has enabled a number of wives to give up their jobs.

The extent of this important alteration in family living may be measured in several ways. In 1937, 46 percent of the families in University Homes had one income receiver, 46 percent had two income receivers, and 8 percent had three income receivers.[10] By 1941 these proportions had changed to 66, 30, and 3 percent, respectively; and to 81, 18, and 1 percent in 1943 and 1944. However, during these same years the proportion of families with 2, 3, 4, and 5 members showed little change in either of the Homes. The number of persons in University Homes supported by one income receiver went from 45 percent of the total in 1937 to 79 percent in 1944, while the number of persons supported by two income receivers declined from 45 percent of the total in 1937 to 20 percent in 1944. The proportion of the residents of John Hope Homes supported by one income receiver was slightly larger, going from 75 percent in 1940 to 86 percent in 1944. In 1937 each 100 workers living in the University Homes supported 193 persons. By 1941 this ratio had increased to 211 persons for each 100 income receivers, and it increased further to 259 persons for each 100 income receivers in 1944. Comparable ratios for John Hope Homes were 249:100 in 1940, 265:100 in 1942 and 296:100 in 1944.

[9] The more or less constant number of persons per family resulted partly from the fixed proportions of apartments of various sizes which are available in the Homes.

[10] A very small number of families had four income receivers from 1937 through 1940.

TABLE 2.—*Average Number of Income Receivers, Income Received, and Number of Persons Supported, 1937–44*

Year	Total number of families	Total number of persons	Total number of wage earners	Average size of family		Average persons supported per income receiver		Average income receivers per family		Average income per income receiver	
				Persons	Indexes (1940=100)	Number	Indexes (1940=100)	Number	Indexes (1940=100)	Amount	Indexes (1940=100)
University Homes:											
1937	749	2,360	1,220	3.15	101.3	1.93	91.5	1.63	110.8	$608	96.5
1938	702	2,235	1,121	3.18	102.3	1.99	94.3	1.60	108.8	617	97.9
1939	709	2,225	1,095	3.14	101.0	2.03	96.2	1.54	104.8	616	97.8
1940	747	2,324	1,101	3.11	100.0	2.11	100.0	1.47	100.0	630	100.0
1941	704	2,191	966	3.11	100.0	2.27	107.6	1.37	93.2	692	109.8
1942	722	2,200	931	3.05	98.1	2.36	111.8	1.29	87.8	836	132.7
1943	637	1,936	771	3.04	97.7	2.51	119.0	1.21	82.3	1,055	167.5
1944	608	1,890	732	3.11	100.0	2.58	122.3	1.20	81.6	1,161	184.3
John Hope Homes:											
1940	610	1,946	783	3.19	100.0	2.49	100.0	1.28	100.0	562	100.0
1941	653	2,164	827	3.31	103.8	2.62	105.2	1.27	99.2	615	109.4
1942	666	2,189	827	3.29	103.1	2.65	106.4	1.24	96.9	761	135.4
1943	637	2,055	734	3.23	101.3	2.80	112.4	1.15	89.8	1,026	182.6
1944	596	1,999	676	3.35	105.0	2.96	118.9	1.13	88.3	1,144	203.6

CONTINUOUS RESIDENTS, 1940–44

The detailed effects of the two most important reasons for the decline in the number of income receivers may be seen through study of two groups of families. Information regarding the 600 families which resided in the Homes continuously from 1940 to 1944 [11] and did not receive allotments, shows the effects of the increased earning power of the chief wage earner, or "tenant," upon the employment of other members of the family. For a second group, which varied in number from year to year and included all families receiving allotments during 1942, 1943, and 1944, employment trends may be largely attributed to the direct effects of the draft and the allotment system.

Among the first group, the proportion of families dependent upon the earnings of only the tenant increased from 65 percent in 1940 to 80 percent in 1942 and to 85 percent in 1944.[12] In each year the average earnings of those tenants who were the sole support of their families exceeded those of the tenants who received assistance from other members of the family, although the total incomes of the families with additional income receivers were somewhat larger (table 3).

TABLE 3.—*Average Annual Earnings of 600 Families Residing in the Homes*[1] *Continuously, 1940–44*

Year	Tenant only employed		Tenant and others employed			
	Number of families	Average annual income	Number of families	Average annual earnings		
				Total	Tenant	Others
1940	394	$780	206	$987	$671	$316
1941	444	828	155	1,052	713	339
1942	479	1,011	121	1,330	926	404
1943	511	1,292	89	1,654	1,192	462
1944	518	1,460	82	1,875	1,311	564

[1] Data for University and John Hope Homes have been combined. Excludes families which received allotments.

[11] This period was selected so that data from the two Homes could be combined and because most of the decline in employment occurred during these years.

[12] These proportions correspond very closely to those for all families.

Many of the 600 families, of course, did not report changes in the number of income receivers. During the 4-year period 222 families lost 225 income receivers, 25 of whom left the family units, 3 became ill and unemployable, 2 died, 2 went into the Army but did not make allotments, and 193 (most of whom were wives of tenants) gave up their jobs. In the opposite direction, 89 families gained a total of 92 income receivers, all of whom took jobs, with a net loss for the 600-family group of 133 persons.

Although to some extent these divergent tendencies may have been caused by circumstances affecting only individual families, certain generalizations may be made. Among those families which lost income receivers the average earnings of the tenants alone were greater during the year in which the additional income stopped than during the preceding year, although the total family income generally dropped after the loss of the second or third worker. To illustrate, in 1940 the earnings of the 82 tenants averaged $686 and the combined incomes of these families (including other workers) averaged $1,004. In 1941 the same 82 tenants earned, on the average, $775, but the loss of, roughly, one income receiver per family reduced the average family income to $809. Similar shifts in earnings occurred during succeeding years.

Each year a number of families considered in one form or another the question, "Which do we want, more income or more free time?" Generally, those who decided to add an income receiver, or who did not give up the additional income, had been receiving less than those who decided to drop an income receiver, although, of course, the situation was reversed after the change. The various motives involved, such as leisure time and improved standards of living (or increased costs of maintaining the same standard) affected individual families differently, and the margin for decision may have been slight in some cases. To illustrate again, between 1941 and 1942, 68 families, with average earnings in 1941 of $695 and $1,000 for tenants and family, respectively, decided that they could live on less, and the average family income for this group dropped to $910 in 1942. Conversely, 30 families decided that their 1941 earnings of $935 were insufficient and, through adding income receivers, raised the average to $1,398 in 1942.

As a group, the incomes of the 600 families exceeded those of the total group of families (shown in table 1) which included the less-stable families and those depending upon allotments, and, although the general trend of annual incomes followed that of the total, the average increase from year to year was slightly greater for this group than for the total. However, it may be assumed that tendencies similar to those outlined above were present among those families which moved in or out of the Homes during the period 1940–44, although no satisfactory basis for comparison is available.

The decline in income receivers per family is especially significant in view of the marked increase in employment opportunities in the Atlanta area, discussed later. As a compensating factor, although the average family income may not have been so high during the war years as it would have been had the mothers and wives continued to work, the general well-being of the family unit undoubtedly improved because the mother could be at home.

It should be explained parenthetically that the contribution of the second or third income receiver has never been large. The average income of the families in University Homes with two income receivers has been from 20 to 33 percent above that of the families with one wage earner.[13] The difference was less in John Hope Homes, where the number of families with two income receivers has been lower. The number of families with three income receivers was too small during most of the 8-year period to provide adequate data for comparison, although for the cases available earnings of families with three workers were substantially above those with one earner.

FAMILIES RECEIVING SERVICEMEN'S ALLOTMENTS

A total of 226 families received allotments during one or more of the three war years, 1942, 1943, and 1944. The factors discussed above were operative in a few families in this group in which the man who had gone into the Army was not the chief wage earner, but most of the changes in family income and employment status that took place were directly attributable to the draft and the allotment system. Although there were many variations in individual cases, the typical family in this group consisted of husband and wife, with one or two small children, or none. The wife was not employed prior to the draft call and did not take a job, but depended entirely upon the allotment for the family income.

Among the residents of the Homes, 16 wives, 7 mothers, and 1 father received allotments in 1942. For 11 families the allotment constituted the sole income, but in 9 cases the allotment receiver was employed, in 5 cases other members of the family were employed, and 1 person who received an allotment had income from other sources, although she was not employed.[14] The comparison between the 1941 status of these families and that in 1942 is significant. In 23 families[15] there were 40 income receivers in 1941, 38 of whom were employed and 2 of whom received pensions. In 1942 there were 34 income receivers in the 23 families, but only 16 of these were employed. The loss of 22 in the number employed occurred as follows: 15 men went into the Army, 6 wives and mothers stopped working after the allotments were made, 1 man died, and 1 person left, and 1 entered the Homes.

The average income of the 23 families increased slightly, from $906 in 1941 to $953 in 1942. However, the allotments did not replace the earnings of the men who had been drafted. In the 13 cases permitting comparison, the earnings of the men going into the Army averaged $699 in 1941, while the average allotment received by their families in 1942 was only $598.

Altogether, 94 wives, 17 mothers, 2 fathers, and 1 grandfather received allotments for the first time in 1943, and 22 of the allotments which had originated in 1942 were continued in 1943. Seventy-three of the families which received allotments for the first time in 1943 depended entirely on the allotments for their incomes. In 21 cases the allotment receiver was employed in 1943, and in 21 cases

[13] A small part of the additional income was lost in those cases in which the earnings of a second or third worker moved the family into a higher rental bracket. However, the gradations in the rentals were not sharp and would not have deterred a potential worker from taking a job.

[14] There was a duplication in the count, since in 2 families both allotment receivers and others were employed.

[15] Comparative data were not available for 1 family, which entered the Homes in 1942.

some other member of the family unit was employed.[16] Three families reported additional income from gifts or pensions.

The number of income receivers among these families dropped from 163 in 1942 to 139 in 1943. (Comparative data was not available for one family which entered the Homes in 1943.) However, the number of employed persons dropped from 160 [17] to 46 in 1943. Expressing this situation in another way, 93 of the persons who received allotments for the first time in 1943 were not employed during that year, and only 21 of them had jobs.[18] Most of the loss in employment was accounted for by the 94 men who were taken into the services. Twenty-two wives and mothers of servicemen gave up their jobs after the allotments were made. Five persons who had been employed in 1942 left the family units, 3 employed persons entered the Homes in 1943, and 4 wives who had not worked in 1942 took jobs after their husbands left. It should be pointed out parenthetically that 19 allotments, or more than 15 percent of the new allotments received in 1943, were made by sons or newly acquired husbands who were either unemployed or not included in the family unit in 1942.

For the 113 families receiving allotments for the first time in 1943, the loss of the servicemen's earnings resulted in a decline in the average income per family from $999 in 1942 to $904 in 1943. There was an even greater difference between the average 1942 earnings of the men who went into the Army ($888) and the average allotment ($667).[19] On the other hand, 25 allotments, more than one-fifth, were greater than the total earnings of the families concerned for the previous year.

Additional income raised the average income of the 22 families which had first received allotments in 1942 from $914 in 1942 to $1,015 in 1943. Part of this increase occurred through increases in some of the allotments and part came through increased earnings.

A total of 85 wives, 5 mothers, and 1 daughter received allotments for the first time in 1944 and 114 of the families on the allotment lists in 1943 continued to receive the payments in 1944. Among the families receiving allotments for the first time in 1944, 68 [20] depended entirely on the allotments for income. Thirteen of the allotment receivers were employed; in 6 cases other members of the family unit were employed; and in 3 cases the husband was in the Army only part of the year, and both allotments and earnings were reported. The number of income receivers in 78 families among this group dropped from 93 in 1943 to 88 in 1944,[21] but the number of persons employed dropped from 92 in 1943 to only 19 in 1944 (excluding the duplication arising in those cases in which husbands were in the Army only part of the year). The loss in employment was caused by the departure of 69 men who went into the Army; there was a net loss of 4 employed persons.[22]

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[16] In 16 families of the latter group the allotment receiver herself was not employed.
[17] One 1942 income was a gift and two were pensions.
[18] The number of allotment receivers was greater than the number of families receiving allotments, because one family had two allotment receivers. The 21 employed allotment receivers include the family entering the Homes in 1943.
[19] Based upon 94 cases; the remaining allotments came from men who were unemployed or not in the Homes in 1942.
[20] Including 70 allotment receivers.
[21] All of the comparisons between 1943 and 1944 are based upon 78 families; 1943 records were not available for 11 families who entered the Homes in 1944.
[22] 7 stopped working and 3 took jobs.

The average income of this group decreased from $1,252 per family in 1943 to $1,165 in 1944, although 18 families received greater incomes in 1944 than in 1943. A comparison of the earnings of the men going into the services with the allotments which replaced their earnings shows a greater drop, from $1,195 in 1943 to $1,025 in 1944.[23]

It is important to notice whether the receipt of the allotments had any cumulative effects upon the families concerned. There were 114 families which received allotments in both 1943 and 1944, some of which had been on the allotment lists in 1942. Although there were numerous wide fluctuations, the average family income of this group changed only slightly, from $899 in 1943 to $923 in 1944. Much of this increase can be traced to an increase in the average allotment from $643 in 1943 to $667 in 1944, resulting from changes in the number of dependents. On the other hand, there was a slight decrease in the number of income receivers, from 142 to 138, for the 114 families as a group.

The average amount received by the new allotment receivers increased from $539 in 1942 [24] to $660 in 1943 and to $944 in 1944, indicating that in the earlier months of the war a larger proportion of sons and childless fathers had been drafted, and that as the war progressed a larger proportion of fathers with children was being taken into the service. Reports for 1944 show a number of cases involving 2 or 3 children, and a few in which there were 4, 5 or 6 children.

In each year the average income of the families receiving allotments was lower than the average income of all families, and the allotments only partially replaced the earnings of the men who were drafted. On the other hand, in 1944 about 17 percent of the families depended upon the allotments for all or part of their incomes, and the aggregate of the allotments amounted to about 10 percent of the total income received by the residents of the Homes.

Annual Earnings of Individuals

A distinct break appears in the trend of individual earnings, whether viewed as occupational earnings or as a general average of income per wage earner. From 1937 through 1941, changes in occupational earnings were small, with irregular decreases and increases from year to year. For example, the earnings of common laborers employed in factories or on construction jobs averaged $742 in 1937, $699 in 1938, $727 in 1939, $702 in 1940, and $736 in 1941; and janitors' earnings averaged, for the same years, $687, $763, $737, $729, and $677. As a group, female employees of commercial laundries received annual incomes of $457 in 1937, $438 in 1938, $441 in 1939, $482 in 1940, and $471 in 1941. The average income per worker, among the University Homes residents, rose slightly, from $608 in 1937 to $692 in 1941, as a result of the elimination of some of the smaller individual incomes.

On the other hand, as was shown in table 2, all earnings rose rapidly in 1942, 1943, and 1944. The average income of the wage earners living in University Homes increased almost 70 percent from 1941 to 1944, rising to $836 in 1942, to $1,055 in 1943, and to $1,161 in 1944. Among the residents of John Hope Homes the average income per

[23] Based on 69 cases.

[24] The 1942 average was proportionately lower than that for the other years, because four of the allotments were paid during only part of the year. Had these allotments covered the entire year, the average would have been $585

wage earner rose from $562 in 1940 to $615 in 1941, to $760 in 1942, to $1,025 in 1943, and to $1,144 in 1944. During this latter period individual earnings increased more rapidly than family incomes.

This increase in average annual earnings resulted not only from increases in wage rates and more regular employment during the war period, but also from the establishment of new employment opportunities in the Atlanta area and from the fact that a larger number of better-paying jobs were opened to Negroes.

The average annual earnings of those occupations in which the number of persons employed was sufficiently large to permit year-to-year comparisons are shown in table 4. The occupations listed are also those in which Negro workers constitute a large proportion of the employees, and include about half of the male workers studied, and, up to 1943 and 1944, 70 percent of the female workers. Since, for the purposes of this study, allotments from servicemen are considered as income, proportionately fewer women were employed during 1943 and 1944 in the occupations studied.

The 1943 occupational earnings of male workers were 27 to 67 percent above the average for the prewar period 1937–41; and the 1944 occupational earnings were 42 to 94 percent above the prewar averages (table 4). The increase during the war years may be expressed in another manner. Prior to 1942 only pullman porters received more than $1,000 a year and in only three instances did the average annual earnings of other male occupations exceed $800. In 1944, however, the average earnings of each of the occupations listed were above $1,000 and seven of the nine were above $1,200. Similarly, in 1943 the occupational earnings of female workers were 16 to 99 percent above the 1937–41 average; and the 1944 occupational earnings were 19 to 117 percent above the prewar figures.

It is important to observe the extent to which the group of Negro workers included in this study shared in the general shift to better jobs which occurred during the war period. The analysis, perforce, was limited to the situation of the families while they were residents

TABLE 4.—*Average Annual Earnings in Selected Occupations, 1937–44, and Increase in Earnings During War Years*

Occupation	Average earnings, 1937 to 1941	Increase, 1943 over 1937–41 average		Increase, 1944 over 1937–41 average	
		Amount	Percent	Amount	Percent
Male workers:					
Pullman porters	$1,103	$305	28	$692	63
Manufacturing and construction laborers	720	483	67	676	94
Waiters, restaurants and hotels	754	243	32	317	42
Service-station attendants	756	387	51	589	78
Truck drivers	738	439	59	602	82
Janitors	709	367	52	536	76
Chauffeurs, private families	673	181	27	405	60
Porters, stores and buildings	679	411	60	571	84
Pressers and dry cleaners	652	323	50	574	88
Female workers:					
Clerks, typists, secretaries	632	197	31	384	61
Maids, department stores	494	147	30	230	47
Maids, buildings	485	192	40	209	43
Cooks, private families	443	70	16	82	19
Maids, offices	422	419	99	492	117
Cooks, restaurants	430	316	73	366	85
Maids, private families	287	56	20	89	31
Waitresses	264	155	59	244	92

of the Homes.[25] More spectacular statements probably could be made if those workers who left Atlanta and went to larger war centers or to shipbuilding areas could have been traced. However, these data do show something of what has been happening to the Atlanta Negro workers. The various restrictions placed by the management of the Homes upon new tenants leads to the belief that, although certain individuals left and others entered the Homes each year, the general composition of the residents was comparable from year to year.

Average annual earnings of important groups of related occupations have been combined in table 5, in an attempt to trace the gradual movement of the workers from the unskilled, low-paid occupations to semiskilled and skilled occupations. Certain trends may be noted. Prior to the war about half of the male workers studied were employed by office buildings as janitors or porters, or were in personal-service occupations, either for commercial enterprises (hotels, restaurants, barber shops) or for private families (working as chauffeurs, butlers, and yardmen). The average earnings of these workers were at the bottom of the scale throughout the 8-year period. As a result, although the wage rates for these occupations increased during the war years, employment in them dropped as the workers gradually moved to better jobs. In 1943 only 36 percent and in 1944 only 34 percent of the male workers were employed by office buildings or in personal services. At the other end of the wage scale were railway employees,[26] white-collar workers,[27] construction workers (other than laborers), and semiskilled workers and laborers in war plants or army installations. During the prewar years less than 20 percent of the male workers were found in these higher-paid occupations, but by 1943 this proportion had increased to 31 percent and rose to 33 percent in 1944. Much of this change came as the result of the building of new establishments in the Atlanta area, including Lawson General Hospital, the Atlanta Ordnance Depot, and the Marietta plant of the Bell Aircraft Corporation. Railway employment also increased.

A somewhat different shift has taken place in the status of employed women. In 1943 more than 20 percent and in 1944 more than 30 percent of the women who reported incomes received all of their income from servicemen's allotments. In 1944 an additional 5 percent of women with incomes received allotments in addition to their salaries or wages.[28] As incomes from allotments became available the employment in most of the occupational groups listed was reduced, although the greatest decline appeared among the cooks and maids employed by private families. It may be assumed that a large part of this reduction occurred among part-time workers. The reduction in employment in this particular category is significant, in view of the fact that the average wage for those remaining in this group was $408 in 1944, much below the average allotment. On the other hand, only in 1944 did the average allotment rank high among the average occupational earnings of females, and then it was still below the average

[25] The rate of turn-over of tenants was greater during the earlier years of the operation of the Homes than during the last 2 or 3 years. Slightly less than 50 percent of the tenants living in University Homes in 1944 had remained through the 8 years, and about 75 percent of the tenants in John Hope remained through the 5 years since this project was opened.

[26] Including pullman porters, dining-car cooks and waiters, freight handlers, and railway and railway-express porters.

[27] Postal employees, teachers, insurance agents.

[28] It should be pointed out that the occupational earnings reported for women for the years 1942–44 exclude receipts from allotments. In general, gifts and sources of income other than the earnings attributable to the principal occupation have been excluded from this analysis, although they were included in the data on family incomes and are used by the management of the Homes in establishing rentals.

TABLE 5.—*Average Annual Earnings of Occupational Groups, 1937–44, and Increase in Earnings During War Years*

Occupation	Average earnings, 1937 to 1941	Increase, 1943 over 1937–41 average		Increase, 1944 over 1937–41 average	
		Amount	Percent	Amount	Percent
Male workers:					
Laborers in Government establishments and war plants	$1,041	$295	28	$439	42
Construction workers (excluding laborers)	1,143	266	23	268	23
White-collar workers	998	911	91	1,001	100
Railway employees	876	522	60	753	86
Manufacturing occupations (semiskilled)	818	516	63	550	67
Laborers, manufacturing and construction	734	504	69	751	102
Truck drivers and warehouse workers	740	461	62	575	78
Personal service (commercial)	698	463	66	513	73
Office-building employees	693	396	57	555	80
Personal service (private family)	649	116	18	327	50
Female workers:					
White-collar workers	666	150	23	376	56
Manufacturing occupations (semiskilled)	454	453	100	493	109
Laundry and dry-cleaning workers	465	144	31	225	48
Cooks, commercial	438	192	44	243	55
Maids, commercial	436	183	42	248	57
Employed by private family	327	53	16	81	25
Personal service (commercial)	318	126	40	193	61

earnings for white-collar workers, semiskilled workers in manufacturing plants, and workers in war plants.

The elimination of the allotment system will require another important readjustment in the employment status of the women residing in the homes. Of course, in many families the returning husband will resume work, substituting his income for the allotment which had gone to the unemployed wife and reversing the tendency described above. On the other hand, those women who gave up jobs after receiving the allotments may have to return to work if the earnings of the husband are not sufficient to maintain the family.

Table 6 presents several records of individual workers which illustrate the two trends in earnings discussed above: the increase in wage rates in particular occupations and the increases in earnings received by those who transferred to better jobs. These cases are not unusual and may be regarded as typical.

TABLE 6.—*Summary of Employment and Earnings of Typical Wage Earners in the Homes, 1937–44*

Employed by same establishment and in same occupation during entire period

Case	Occupation and industry	Annual earnings							
		1937	1938	1939	1940	1941	1942	1943	1944
No. 1	Butcher, meat packing	$988	$988	$780	$780	$832	$910	$1,248	$2,037
No. 2	Truck driver, wholesale paper	832	780	771	780	780	964	1,058	1,172
No. 3	Chef, tea room	1,560	1,417	1,417	1,417	2,058	1,746	1,957	3,072
No. 4	Porter, garage	(1)	728	728	754	806	1,004	1,165	1,744
No. 5	Trucker, railway terminal	728	884	960	960	960	1,196	1,512	1,595
No. 6	Baker, cafeteria	1,144	1,040	1,040	1,300	1,430	1,560	1,750	1,820
No. 7	Messenger, meat packing	806	896	905	886	986	1,391	1,538	1,694
No. 8	Presser, laundry	624	624	624	624	650	780	1,199	1,533
No. 9	Broom maker, broom manufacturing	696	780	780	780	780	952	1,182	1,327

[1] Information not available.

TABLE 6.—*Summary of Employment and Earnings of Typical Wage Earners in the Homes, 1937–44*—Continued

Transferred to new employers and occupations during period

Year	Occupation	Annual earnings	Occupation	Annual earnings	Occupation	Annual earnings
	Case 10		Case 11		Case 12	
1937	Janitor, realty company	$360	Maid, private family	$312	(1)	
1938	Janitor, Housing Authority.	1,080	Maid	468	(1)	
1939	do	1,140	do	416	Porter, filling station	$756
1940	Laborer, army installation.	1,020	do	416	do	756
1941	Warehouseman, wholesale paper distributor.	832	do	416	Laborer, grocery chain	665
1942	Machine operator, Army installation.	1,286	do	624	Laborer	1,150
1943	do	1,503	Drill-press operator	1,820	Stock router operator, aircraft.	1,345
1944	(1)		do	2,477	do	2,652
	Case 13		Case 14		Case 15	
1937	(1)		Linen checker, hospital	$611	(1)	
1938	Chauffeur, private family.	$429	do	661	Maid, private family	$390
1939	do	520	do	661	do	390
1940	do	520	Laborer, warehouse	783	do	364
1941	Laborer, Army installation.	1,080	Laborer	1,080	do	312
1942	do	1,298	Pullman porter	1,260	do	312
1943	Foreman of laborers	1,537	do	1,260	Anodyzer, aircraft	1,664
1944	Senior laborer	1,541	do	2,572	do	1,771
	Case 16		Case 17		Case 18	
1937	Porter, theater	$520	(1)		Porter, bottling company	$754
1938	do	520	Truck driver	$624	Porter	858
1939	Porter, construction company.	650	Janitor, bank	660	do	858
1940	Substitute mail clerk, U. S. P. O.	935	do	680	do	1,130
1941	do	1,729	do	680	do	1,130
1942	do	2,091	Janitor, Army installation.	1,320	do	1,275
1943	do	2,682	Car cleaner, railway	1,323	Substitute mail clerk, U. S. P. O.	2,422
1944	do	2,673	Substitute mail carrier, U. S. P. O.	1,543	do	2,373

[1] Information not available.

Work and Wage Experience of Willow Run Workers[1]

THE work of the thousands of men and women hired to produce B–24 Liberators at the Willow Run bomber plant ended in July 1945.[2] Some of the workers continued to live in the neighborhood of the plant, but many more returned to their home communities or other communities, where they are seeking or have already obtained employment. A small number of workers, mainly women, withdrew from the labor market. For most of Willow Run's workers, however, continued gainful employment is an economic necessity.

At the Willow Run plant new jobs, new skills, and new levels of earnings were acquired. For some of the workers the change from their prewar status was very great as regards both their earnings and the way they made their living. Farmers became riveters and housewives and clerks became assemblers and drill-press operators. For a variety of reasons the majority of the workers were looking forward to factory employment as the most desirable method of earning a living after the war. What they did and what they earned at their war work will undoubtedly influence the kind of peacetime employment they will seek.

This study by the Bureau of Labor Statistics is one of a series designed to provide factual information useful in the solution of some of the industrial problems emerging from reconversion to peacetime production. This report describes the industrial and educational background of the workers at the Willow Run bomber plant, their family status, wartime migrations, earnings, and postwar expectations. The study is based on a group of 307 persons who were selected as representative of the 7,400 production workers still employed at the plant at the end of May 1945. On the basis of follow-up studies of these same 307 individuals, the Bureau will report periodically on the experience of these workers—their employment, occupations, and earnings—after the shut-down of the plant.

Physical Characteristics of Willow Run

THE BOMBER PLANT

The Willow Run bomber plant, the world's largest factory and one of America's most-publicized plants, is on the outskirts of Ypsilanti, some 30 miles west of Detroit. The plant is reported to have cost $100,000,000, and its nearly 3½ million square feet of space cover 80 acres. Among other materials, 5,000,000 bricks, 5 miles of water pipes, and 100,000 fluorescent lights are reported to have been used in its construction. The plant is said to have a capacity for employing 100,000 workers; the actual peak employment (reached in July 1943) was somewhat over 42,000 workers.

The plant was built by the Government as a special factory, equipped with special tools for a special war purpose, namely, to turn out B–24

[1] Prepared by Joseph F. Bober and Carrie Glasser of the Bureau's Wage Analysis Branch.

[2] As of July 30 there were 3,167 workers at the plant, mainly maintenance and protection workers. By September 1, it was estimated, only a small force of 800 would be employed for fire and plant protection and general maintenance.

Liberator bombers. Exactly 8,685 of these planes came off the assembly lines between January 1942 and June 1945. At the peak of production the ships were produced at the rate of 1 every 55 minutes. An Army-Navy "E" award was made early in May 1945. Willow Run's record has been recognized as one of the great achievements of American production.

By July 30, 1945, the plant had ceased to be an operating unit and for many months it appeared that the shut-down was permanent. On September 21, 1945, however, Henry J. Kaiser, the West Coast shipbuilder, announced the formation of a new automobile company to produce low- and medium-priced cars. Two weeks later the new management reported that part of the plant would be taken over officially on October 15 and that production was expected to start in March 1946.

WILLOW RUN HOUSING PROJECT

To ease the housing shortage created by the operation of the bomber plant, the United States Government, through the Federal Public Housing Authority, is said to have spent $23,000,000 erecting Willow Run project on some 2,000 acres of land purchased through condemnation. This housing project is partly in Ypsilanti Township and partly in Superior Township, a little less than 2 miles northwest of the bomber plant. The project included dormitories for 5,000 single persons, 2,500 temporary family-dwelling units, 1,000 war apartments and 960 duplex trailer apartments for 2-person families, and trailer space for 500 private trailers. Although the project was planned to accommodate about 20,000 people, the maximum actually housed was approximately 14,000.

At its peak, Willow Run project had a large department store, two chain drug stores, two chain supermarkets, two beauty shops, a barber shop, a shoe-repair shop, a watch-repair shop, two cleaning establishments, two laundries, two cafeterias, two movie theaters, a bowling alley, three grade schools within the project and access to a fourth school just outside, three physicians, two dentists, a Catholic Church (other denominations did not erect their own building but used other available meeting facilities), a three-engine fire department, a public works department to care for the water and sewage systems, build and repair roads, collect and dispose of garbage and trash, seed lawns, etc., and an extensive recreational program with supervisors for children.

With the closing of the bomber plant, however, Willow Run project was on its way to becoming a modern "ghost" town. By late fall, 1945, the population of the project had dwindled to only 950 persons, most of them living in the family units. Half of this remaining population was Negro. Some of the buildings, especially family dwelling units and dormitory units, were dismantled and moved to other housing projects in Detroit and Ecorse, Mich. Other housing units no longer needed in the project are to be dismantled and moved to housing projects still in need of additional units. It was expected, unless the reopening of the plant under Kaiser management caused a change in plans, that the housing project would soon be closed down completely.

The "Bomber Local" at Willow Run

The United Automobile Workers Union (CIO) has closed-shop contracts with the Ford Motor Co. When the bomber plant started operations, late in 1941, the first workers were transferees from Ford's River Rouge Plant in Dearborn and Ford's Generator Plant in Ypsilanti. These workers remained members of Locals 600 and 849 until March 18, 1942, when the UAW issued a charter organizing the workers into Local 50, popularly known as the "Bomber Local."

Until employment increased to a point representative of the plant in full operation, the workers had their own bargaining and district committeemen but no officers; the local was administered by a regional director. Local autonomy was granted on May 30, 1943, the bylaws were adopted in June, and elections were held on July 7, 1943.

As the closed-shop contract of the UAW covered Willow Run, all of the workers at the plant were union members. The peak membership—about 36,000 workers—was attained in September 1943. Later the membership of the local fell as employment at the plant declined. By autumn, 1945, the membership was down to about 1,500 workers, consisting of the maintenance and repair crew still employed at the plant. The future of the local is uncertain and the charter may revert to the international union.

The local rendered many services beyond the basic duties of collective bargaining and settlement of grievances. Among them were a semimonthly newspaper, "Bombardier," published from June 24, 1942, through June 15, 1945, and a semimonthly bulletin, "The Propeller," designed to inform the members as to their rights as employees, workmen's compensation benefits, War Manpower Commission regulations, etc. The education department, with an active educational director since early 1942, gave courses in collective bargaining, union procedure, time study, and labor history, and conducted weekly town-hall meetings and round-table discussions.

The Recreational Department, with a full-time director from June 1942 till November 1944, organized clubs for members interested in various forms of recreation and classes in the arts.

Workers of Willow Run

In July 1943 employment at Willow Run reached its peak of over 42,000 workers. From then until April 1945 it declined at a rate which during a few months exceeded 1,000 per month; in many months, however, the decline was less than 500. The reduction through the first quarter of 1945 appears to have been due to "natural" attrition; that is, workers were leaving for whom no replacements (on a net basis) were obtained. In April 1945, lay-offs began which reduced employment by many thousands. On May 26, when the group for this survey was selected, 11,557 workers were employed; only 5,872 were still employed by June 7 and 3,167 on July 30.

This survey was made in June 1945 as a part of the Bureau's general program for following the work and wage experience of individual workers. The 307 workers who constitute the sample upon which the study is based are believed to be representative of the 7,400 production workers (exclusive of skilled maintenance workers, tool and die makers, and office workers) who were still employed at the plant at the end

of May 1945.[3] It is less likely that the 307 workers form a representative cross-section of Willow Run's labor force prior to the major lay-off. Probably more workers at the peak of the plant's activity came from the Southern States, were to a larger extent farmers, and had somewhat less formal education—to cite but a few differentiating factors. For these reasons it should be borne in mind that the findings here set forth relate only to Willow Run at the end of May 1945, with 7,400 persons at work exclusive of skilled maintenance employees and office workers.

SEX, AGE, AND PHYSICAL CONDITION OF WORKERS

The majority of the workers of Willow Run were men although approximately 4 out of every 10 employees were women. Among the 307 workers surveyed, nearly 10 percent were Negroes.[4] Men as young as 19 and as old as 71 were employed; the age range for women was from 21 to 65 years. The median age of men (37 years) was somewhat higher than that of women (34 years). Only 16 percent of the men were under 30 years, the group most vulnerable to draft into the armed forces.[5] Of more immediate interest from the viewpoint of reemployment of these workers, nearly 21 percent of the men were aged 50 years or more but only 6 percent of the women were in this older age group. The group of workers 40 years or over included nearly 44 percent of the men and 30 percent of the women. Thus, although the great majority of the workers were in the most employable ages, considerable numbers were of an age which, under unfavorable market conditions, might constitute a handicap to reemployment.

Some of the older workers, of course, entered industry only for the "duration" and intended to withdraw from the labor market upon lay-off from Willow Run. Thus, R. A., a 63-year-old woman, worked at Willow Run as a sewing-machine operator. She indicated that she was "tired of working in a factory and was anxious to get back to housekeeping." On the other hand, for A. H. who, despite his 71 years, was able to perform the work of paper-pattern maker on B–24's, continued employment was an economic necessity. The follow-up survey will be able to report his success in finding a job at light machine work, his indicated preference. Some of the older workers who

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[3] The sample of 307 workers used in this study was drawn from the company's seniority lists covering 7,400 production workers. These lists were arranged by occupational groupings, the workers being listed by seniority under each group irrespective of sex, color, department, or alphabetical spelling of name. By choosing every twelfth name on these lists, 614 workers' names were drawn. The workers' addresses were obtained from the personnel files of the company. From this group of 614 every other name was chosen yielding the sample of 307. In effect, therefore, the sample consists of every 24th name on the seniority lists. The remaining 307 names were held in reserve to make substitutions. If a change was necessary, either because a worker could not be found or because he lived too far away to be visited, the substitute selected was one in the same occupation and whenever possible, from the same locality, as the originally chosen worker.

The sample of 307 workers showed 179 men (58.3 percent) and 128 women (41.7 percent). This proportion corresponds closely to the ratio of men and women laid off as of June 7, 1945. The difference between the group of 7,400 production workers from which the sample was selected and the total employment of 11,557 at the plant on May 26, 1945, represents male workers who, if included, would have raised the ratio of men to women.

The company and union (Local 50, UAW-CIO) were informed in advance as to the nature and purpose of this survey. The Bureau's field representatives interviewed the workers at their homes.

[4] The proportion of Negroes in the BLS sample (10 percent) compares with an estimate, obtained from other sources, of not more than 2 percent. This discrepancy was due to the timing of the BLS study. Most of the Negro workers were transferees from other Ford plants and were the last to be laid off. Hence, as the newly hired workers were dismissed because of cut-backs, the ratio of Negroes to whites increased because the number of Negro workers remained comparatively unchanged.

[5] As of the end of July 1945 nearly 11,000 workers were on military leave from Willow Run, according to reports made by company officials to the U. S. Employment Service. The low proportion of draft-age men in the BLS sample suggests that eligible men in this age group had already been withdrawn for military service.

transferred from other Ford plants to Willow Run had sufficient seniority to give them some assurance of reemployment. J. R., aged 59, who was a machine operator at Willow Run expected to get similar work at the River Rouge plant. S. K., a punch-press operator, aged 57, thought that work would be available for him at Ford's Flat Rock plant. On the other hand, H. W., aged 61, was pessimistic about the prospects of reemployment at factory work. Although he owned a home in the Detroit area and preferred to remain in the community and work in some plant, he felt that he might be forced to return to farming.

A surprisingly large proportion of workers in the group—20.6 percent of the men and 9.4 percent of the women—admitted having physical disabilities which limited them in job selections. These disabilities included heart trouble, anemia, high blood pressure, partial or total blindness, partial or total deafness, pulmonary disease, injuries to body, arms, and legs, and allergies to dust, paint, and oils. A relatively smaller group indicated that they had veteran status, a factor which might serve to give them preferential treatment in hiring. None of the women were veterans and only 7 percent of the men.[6] It should be noted that the veterans and the workers with physical disabilities are not necessarily the same.

EXTENT OF EDUCATION AND TRAINING

As might be expected, the workers who were between 20 and 44 years old had more formal education than those 45 years of age and older. More than half (56.4 percent) of the 20 to 44 age group had 1 to 4 years of high school, whereas the majority (55 percent) of the workers aged 45 and over had 5 to 8 years of grade school and only slightly more than a quarter (28 percent) of this older group had 1 to 4 years of high school. In the younger group 9 percent of the workers had gone through a year or more of college, compared with only 5 percent of the older group.

The survey also disclosed a significant difference with respect to the formal education of men and women. In the age bracket 20 to 44 years the men had acquired more college education than the women. Thus, nearly two-thirds of the women had 1 to 4 years of high school and 6 percent a year or more of college; of the men, 51 percent had comparable high-school training but 11 percent had some college training, or almost twice the proportion of women. In the older age group relatively more men than women had college education, but the proportion of women who had completed 1 to 4 years of high school (36 percent) was greater than that of men (24 percent).

None of the workers studied was employed in a professional or semiprofessional capacity at Willow Run, but rather surprisingly almost 8 percent had some college training. Although it is not known how many of these workers regard industrial employment as their main source of livelihood, it is probable that a fair number took factory jobs only for the war period. Thus, Mr. L. B., a pastor, took a production job at Willow Run but expected to return to his pulpit when he was laid off from the plant.

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[6] The number of veterans will be much higher than these figures indicate after the 11,000 workers on military leave are discharged from the armed forces.

From the evidence gathered regarding vocational training, it appears that on-the-job experience rather than trade schools provided the necessary skills for the workers surveyed. Prior to January 1941, 291 of the 307 workers had no formal trade or vocational training and only 16 had taken some schooling in industrial employments. After January 1941 a slightly larger number, 20, had some formal industrial training but the overwhelming number still depended on the acquisition of skills while on the job, including riveters and welders who were given short training courses in the plant.

FAMILY STATUS

As married persons and those with dependents are perforce under great economic pressure to secure a steady flow of income, it is of interest that more than two-thirds of the workers studied were married, nearly two-thirds were heads of families [7] with one or more dependents, and slightly more than half of the workers had one or more children under 15 years of age. A third of the workers had no dependents while somewhat over a fourth (28 percent) indicated that they were responsible for the support of three or more persons.

Although the greater number of the workers lived with their families within commuting distance of the bomber plant, others were maintaining two households because their dependents were left behind in another city or on farms. For example, B. L., a widower employed as a spray painter, supported an aunt aged 80 and a niece aged 37, both of whom lived in the South.

Most of the men interviewed (70 percent) were the only employed members of their families. Fewer women (30 percent) than men, as might be expected, were in family groups for which they were the sole wage earners. More than half of the women but only 20 percent of the men were members of families having one or more other persons employed.

Migration of Workers

The survey endeavored to ascertain, among other things, where the workers of Willow Run came from, what kinds of communities they had lived in, what it cost them to move, what improvement in earnings resulted from their change in residence and occupation, and whether family obligations had been an impediment to migration.

Of the sample of 307 workers employed at Willow Run at the end of May 1945, 55 or 18 percent indicated that their place of residence at the beginning of the year 1941 had been outside Michigan. Because many workers moved with their families, the migration of these 55 workers brought a total of 173 persons to Michigan. From four other Great Lakes States (Indiana, Illinois, Ohio, and Wisconsin) came 5 percent of the workers; seven Southern States, including Arkansas,

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[7] Only one person was considered as "head of family" in cases in which a group of people, related by blood, marriage, or adoption, lived together as part of a single household. An adult scheduled worker, living with his or her parents and paying a fixed sum regularly for room and board, was not considered as head of the family if one of the parents normally contributed substantially to the finances of the household; no worker was considered as head of a family, even though he had a wife and children living with him, if he resided in his (or his wife's) parents' house. On the other hand, a worker was scheduled as head of the family, even if the other family members were not presently living in the same household with him (e. g., because his job was too distant from home), provided he was the recognized head of the family group for which he was responsible. Economically independent persons living alone or boarding with unrelated persons were considered to be heads of "one-person families."

provided almost 10 percent of the migrants, but less than 2 percent came from the East (New York and Pennsylvania).

Viewing the migration merely in terms of the State of residence of these workers tends to obscure the actual distances involved between the workers' prewar location and Willow Run. Thus, although Michigan provided 82 percent of the workers, only 72 percent came from communities within 50 miles of Ypsilanti (home of Willow Run), slightly over 3 percent came from a distance of 50 to 100 miles, and 18 percent from a distance of 100 to 500 miles, while for 8 percent of the workers the move covered over 500 miles.

Because of the marked decline in employment, it is probable that many workers whose homes were outside Michigan or at a great distance from the Detroit area had already left the region by the time of this survey (June 1945). The proportion of migrants in the labor force of Willow Run before the large cut-backs may, therefore, have been much higher than the figures based on this particular sample indicate.

The workers of Willow Run, irrespective of their State of residence at the beginning of the war, were largely small-town folk. In January 1941 nearly a third of the 307 workers lived in communities of under 10,000 population (which includes rural areas) and slightly more than three-fifths in communities of under 50,000 population. The larger cities of 250,000 and over accounted for less than a fourth of the workers; most of this group came from Detroit.

For practically all (89 percent) of the 104 workers in the group whose employment at Willow Run involved a transfer of residence from one city to another, this was the only migration since January 1941. Approximately 8 percent of the workers moved twice, while the remaining small group moved three or more times. Of this last group, the case of R. K. is typical. He moved with his wife and 3 young children from New Mexico to Arkansas, then to Texas, and finally to Michigan. It is apparent however, that for most of the workers surveyed, the wartime shift was essentially one journey, without intermediate stops, from their prewar places of residence to work in the Detroit area. Not all of these workers actually lived in Willow Run project while employed at the plant, although most of them settled in and around the Detroit area.

Four out of five moves made by single persons without dependents cost under $25; for the rest of the workers in this category the cost per move was between $25 and $50. It cost S. A. $10 and C. M. $12 to reach Willow Run from towns in Kentucky. Both were single and without dependents. Heads of families were faced with greater expenses because they usually moved their dependents and part or all of their belongings. B. J. was able to keep down to $67 the cost of moving himself, his wife, mother-in-law, three sons, and two daughters from Lansing to Wayne, Mich. R. K.'s migrations (cited above) between New Mexico, Arkansas, Texas, and Michigan, cost $200 each. A third of the migrations made by heads of families required less than $25 each but for almost a fourth of the moves, the expenses were in excess of $100.

The greater cost incurred in moving a family was undoubtedly an important deterrent to migration. It may also be assumed that the difficulties of obtaining adequate housing accommodations in the war-crowded Detroit area were given greater consideration by married persons and others with dependents than by single men and women;

42.8 percent of the single persons moved, as compared with 30.3 percent of the married group. Workers in families of three or more were also less mobile than workers in smaller-size family groups. The number of women moving was greater, in relation to their representation in the sample, than that of men; this, again, may be explained largely by the fact that greater proportions of men than women were married.

Most of the Negroes employed at Willow Run were transferees from Ford's River Rouge Plant and Ford's Generator Plant in Ypsilanti, and were therefore already living in the general vicinity of Willow Run. This explains why the proportion of Negroes in the migrant group was found to be considerably less than that of whites.

The reasons for the migration of workers to Willow Run are undoubtedly as complex and varied as the workers themselves. For many, if not most, the high wages paid in the Detroit area must have been a strong inducement. For nearly three-fourths of the migrants, gross weekly earnings increased as a result of the change.

Of the 307 workers surveyed, less than 4 percent planned no postwar migration. This small proportion probably consisted of workers who lived in Willow Run project or in close-by Ypsilanti. Most of the workers, 274 or 89 percent, reported that they intended to move to another city within Michigan, and 21 others planned to leave Michigan for 15 other States and Hawaii. One worker who expected to change his State of residence was not certain where he would go.

Employment Pattern

INDUSTRIES FROM WHICH WORKERS WERE DRAWN

Farms and factories, schools, professions, and trade were the sources from which Willow Run drew its manpower. In January 1941, 7 out of every 10 of the 307 workers surveyed were employed in gainful occupations. Workers who were seeking but unable to find employment formed slightly over 3 percent of the sample. About 2 out of 10 persons were not in the labor market; these included housewives, students, and members of the armed forces.

The factories, as might be expected, furnished the largest proportion of workers. Manufacturing industries accounted for nearly 40 percent of the 307 bomber-plant workers, with the automobile and automobile-equipment industries supplying over 25 percent.[9] A large number of these workers had transferred from Ford's River Rouge Plant in Dearborn and Ford's Generator Plant in Ypsilanti.

Other manufacturing industries whose processes would appear to be only remotely related to the production of aircraft employed nearly 14 percent of the workers at the beginning of 1941. These industries included food, apparel, textiles, printing and publishing, chemicals, and leather.

Work at Willow Run must have involved an even greater adjustment for the nearly 30 percent of the workers who came from nonmanufacturing industries. Of this group, wholesale and retail trade provided the largest proportion, 9.2 percent. From the service trades

[9] The proportion of former automobile workers in the sample may be somewhat higher than the relative number before the cut-backs. Since many of these automobile workers had acquired considerable seniority, they were probably among the last to be laid off.

came 8.1 percent of the workers, 3.9 percent from construction, 3.3 percent from agriculture and 2.3 percent from transportation, communication, and public utilities. Less than 2 percent were drawn from government employment and less than 1 percent from mining and finance, respectively.

JOB CHANGES, JANUARY 1941–MAY 1945

For three-fourths of the workers with prewar employment experience, only one change in employers took place between January 1941 and May 1945.[10] C. H., for example, who was working as a truck driver for a county road commission in Michigan at the beginning of the war, shifted to Willow Run in May 1942 and was still at the plant when interviewed. T. R. was a housewife who had never been gainfully employed until August 1942 when she took her first and only job as crib attendant at the bomber plant. For nearly two-thirds of the workers who were not employed in January 1941, Willow Run was their source of employment throughout the period surveyed.

In view of the high rate of labor turn-over during the war, and especially in war industries, the relative stability of Willow Run's labor force revealed above may seem somewhat surprising. The explanation may lie in (1) the relatively high wages paid at the bomber plant, which provided a strong inducement for workers to remain on the job, and (2) the fact that at the time of this survey employment at Willow Run had already been cut drastically, so that the sample data may understate somewhat the usual rate of turn-over. The workers who came to Willow Run late in the plant's short history were probably those who had made many changes in employers. Since they also had the lowest seniority rating, they were among the first to be laid off and, consequently, may not be adequately represented in the sample studied.

Many more workers changed jobs than changed employers. Some of these changes involved upgrading within the same occupation; in other instances workers moved from one occupation to another.[11] All of the workers with prewar experience changed jobs at least once; for more than half of this group there were two or more such changes. The new entrants into the labor market made fewer job changes; 40 percent of them in May 1945 were still in the jobs for which they were originally hired, and 45.7 percent had changed jobs once. While nearly a fourth of the workers with prewar industrial status held four or more different jobs during the period covered, less than 7 percent of the new entrants had a comparable experience.

The following excerpts drawn from the records collected in this study illustrate some of the types of job changes found. Here, as in previous references, the initials used are fictitious.

D. D. was a door hanger at Ford's River Rouge Plant from 1941 until February 1942. His last rate of pay at that job was $1.15. Transferred to Willow Run at the same rate, he worked as an inspector for 7 months. At the end of this period his rate was raised to $1.25. He was then promoted to working foreman at

[10] Changes from one plant as well as from one employer to another were included in the count as changes in employers. Consequently, if a worker shifted from the Ford River Rouge Plant to the Ford-operated Willow Run, this change was considered a change in employers.

[11] Changes in rates for the same occupation were not considered as changes in jobs.

$1.45 an hour; by May 1945 he was earning $1.59. By the end of May, he was demoted to inspector at $1.30 per hour.

D. B., another Ford transferee from River Rouge where he was a punch-press operator, Class B, became a stock-crib attendant and, later, a route operator at Willow Run. His rate of pay, $1.20 an hour, was the same for all three jobs.

Mrs. S. A.'s employment history is a complicated one. For 1 month in 1941 she worked as a porter for a newspaper; she then became a braider for a cable and wire company. The change in jobs raised her rate from 40 cents to 73 cents an hour. She worked 7 months as a braider, then had 6 months of unemployment after which she returned to her last job at the same rate. After 3 months she moved on to Willow Run where she became first a pneumatic riveter, then an assembler, class C, and finally an assembler, class B. Her entrance rate at the bomber plant was 85 cents which was automatically raised to $1.15.

OCCUPATIONS AT WILLOW RUN

At Willow Run all but 17 percent of the 307 workers were engaged in production work. The 17 percent were plant clerical workers [12] on jobs designated by the company as material disposition, material-control checker, stock-discrepancy adjuster, and maintenance clerk. Most of the production workers were concentrated in two relatively unskilled occupations—riveters and rivet repairers (23 percent) and class C assemblers (20 percent). The remaining 40 percent of the workers were assigned to a varied group of 45 different jobs including class B assemblers, polishers, power-saw operators, hand sewers, truck drivers, and power truckers. Because the sample excluded skilled maintenance workers and tool and die makers, none of the workers surveyed were in these highly skilled jobs.

Although practically none of the workers who produced Liberator bombers at Willow Run had worked in aircraft factories prior to the war, most of those surveyed had had some kind of industrial experience. This experience varied from that of workers in automotive plants to marble and granite cutters, dressmakers, and printers. Of the 228 workers with a prewar employment history, 149 or 65 percent were in the craftsman and manual-worker category. All but 13 of the 149 took work at factory or production jobs at Willow Run; the 13 were engaged in the plant at clerical jobs.

For the dressmaker who became an assembler of B–24 bomber parts and for the printer who became a riveter, the new job required new types of training and adjustment of skills. Despite these differences between the worker's prewar and war jobs, both jobs were subject to an industrial discipline. The bridge between the prewar employments of the remaining 79 men and women and their work at Willow Run was considerably greater. For example, 7 reported their usual occupations to be in the professional and semiprofessional class, such as teachers, musicians, nurses, and dental assistants. One worker had been a pastor of a church. Six out of the 7 took production jobs at Willow Run and 1 took a clerical job.

All of the 6 workers whose usual occupations were those of proprietors or managers became craftsmen or manual workers at Willow Run. Their prewar activities included the management of a bowling alley, a general store, a poolroom, a florist shop, and a restaurant.

It is not known how many of the 11 workers who were farmers by occupation actually owned their own farms or were merely farm labor-

[12] This survey excluded general office workers.

ers. Ten of the 11 took production jobs at Willow Run, and 1 became a clerical worker.

A less drastic shift in type of employment is indicated for those workers who were clerks or sales employees prior to the war. Twenty-five of the 42 who came to Willow Run from clerical or sales employments took clerical jobs at the plant. Two of the 13 prewar workers in service occupations were employed at clerical jobs at Willow Run; 11 were hired as craftsmen and manual workers.

To many of the workers at Willow Run participation in union organization must have been as new and strange as their adjustment to the industrial discipline of the immense plant. Of the 307 workers surveyed, 186 or 60 percent had never been members of any union prior to January 1941. However, union membership was relatively new to only 40 percent of the men. Nearly all (89 percent) of the women, on the other hand, had no experience as union members prior to the war. In interpreting the marked difference in union experience between men and women, it is important to bear in mind that a larger proportion of women had only recently entered the labor market.

Wartime Wages

The earnings of Willow Run workers, like those of most persons employed in war production, were relatively good while they lasted. In 1943 the average annual wage income of the workers surveyed was $3,137.[13] This compares with an average annual wage of $3,191 in the same year for all workers in Michigan employed in war manufacturing industries; for all workers in the United States in the same types of activity the comparable figure was $2,745.[14]

The annual earnings of men at Willow Run were substantially higher than those of women in 1943, largely because of three factors: (a) Some of the women had only recently entered the labor market and did not work a full year in 1943, (b) more men than women worked the seventh day each week at double time, and (c) more men than women were employed at the higher grades of skill within the same general occupations. The higher-paid occupations, such as working foremen, were in the main filled by men. Thus, in 1943 earnings of men averaged $3,376 and those of women, $2,792 (table 1). Almost two-thirds of the men had incomes between $3,000 and $4,000, while for 13 percent the average was over $4,000. Slightly less than half of the women earned between $3,000 and $4,000 and none above $4,000.

In 1944 more women worked a full year and more received hourly rates above the starting amount. As a result, the survey disclosed that the annual income of women rose from $2,792 to $2,928 between 1943 and 1944, a gain of 5 percent, while the annual earnings of men declined slightly owing, probably, to the reduction in overtime. The proportion of men in the $3,000–$4,000 income class increased from 64 percent to 77 percent between 1943 and 1944 but in the next bracket of $4,000 and over there was a decline from 13 percent to

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[13] If skilled maintenance men and tool and die makers had been included in the sample, the computed average annual income would have been higher than $3,137, despite the fact that the survey also excluded office workers.

[14] See State Income Payments in 1943, by Charles F. Schwartz, in Survey of Current Business (U. S. Bureau of Foreign and Domestic Commerce, Washington), August 1944 (p. 12).

7 percent. The concentration of women in the $3,000–$4,000 class increased from slightly under to somewhat over 50 percent but, as in 1943, no women reported incomes over $4,000.

TABLE 1.—*Annual Wage Income of Willow Run Workers, 1943 and 1944*[1]

Income class	Total		Men		Women	
	1944	1943	1944	1943	1944	1943
Under $500		1				1
$500 and under $1,000	1	2		1	1	1
$1,000 and under $1,500	3	3	1	1	2	2
$1,500 and under $2,000	3	16	1	6	2	10
$2,000 and under $2,500	15	24	5	9	10	15
$2,500 and under $3,000	53	47	17	19	36	28
$3,000 and under $3,500	129	87	79	46	50	41
$3,500 and under $4,000	47	62	41	53	6	9
$4,000 and under $4,500	6	12	6	12		
$4,500 and under $5,000	4	6	4	6		
$5,000 and over	1	2	1	2		
Average annual wage income	$3,185	$3,137	$3,363	$3,376	$2,928	$2,792
Total number of workers reporting for both years	262	262	155	155	107	107

[1] Excludes skilled maintenance workers, tool and die makers, and office workers.

It is impossible to estimate at the present time what the annual wage income of Willow Run workers was in 1945 because of the cessation of production at the bomber plant in the middle of the year, the shift of some workers to other employments, others to unemployment, and the withdrawal of a small number from the labor market. It is expected, however, that as a result of future follow-up studies it will be possible at a later time to trace the employment and wage experience of the workers of Willow Run. Those workers who remain in the labor market will undoubtedly make strong efforts to obtain wages at their new employment at least comparable to the level of earnings at Willow Run. It is therefore of interest to examine the going rates of pay and weekly earnings at the bomber plant at the time of this survey.

At the end of May 1945, women received on the average $1.14 per hour and men, $1.19 per hour. These figures are for straight-time pay and exclude overtime compensated for at premium rates. Inexperienced workers at Willow Run were paid a beginning rate of 85 cents an hour in 1945. After a specified period, under terms of the union contract covering seniority and merit increases, these workers received the "going rates" for their jobs, most of which ranged from $1.02 to $1.20 per hour. Workers in the semiskilled category had a rate range from $1.20 to $1.40 an hour and workers in the skilled classifications were paid from $1.40 to $1.85 per hour. At the time of this survey 58 percent of the workers surveyed were paid the unskilled rate of $1.15 per hour. Slightly more than a third of the workers received the semiskilled rate of $1.20 to $1.40 per hour, and only one worker was found in the skilled-rate bracket. The small representation in the highest rate class is due to the fact that the sample excluded skilled maintenance men and tool and die makers.

The hourly rate of pay received by most Willow Run workers with prewar employment experience was considerably higher than their rate of pay at the beginning of the war (table 2). All but 18 percent of this group of the workers had an advance in rates. Over an eighth

had increases of 50 to 100 percent, for approximately 20 percent the rate more than doubled, and for a little over 10 percent the rate had more than tripled. Almost 40 percent of the prewar workers therefore had hourly rate increases of 50 percent or more.

In interpreting these increases in wage rates it is important to bear in mind that in practically all cases in which the increase was substantial the rates at the beginning of the war were low. For example, before coming to Willow Run, B. A. worked for 20 cents an hour as a waitress in a Kentucky restaurant, where she was not permitted to accept tips. Her rate at the bomber plant, $1.15 an hour, was more than five times her prewar rate of pay. A similar situation was found in the case of A. R. who worked as a cook in Pennsylvania for 33 cents an hour. As a riveter at Willow Run she earned $1.15. For the large number of prewar automobile workers who transferred from other Ford plants to Willow Run, the increases were considerably smaller. Before the transfer, many of these workers were receiving around $1.15 an hour. Their new jobs often called for the same rates of pay or rates of about $1.20 and $1.35.

TABLE 2.—*Current Straight-Time Hourly Rates of Willow Run Workers, and Change in Rates for Specified Periods*

Item	Men	Women	Total	
			Number	Percent
Straight-time hourly rate:[1]				
Under 90 cents				
90 cents and under $1.00	5	3	8	2.6
$1.00 and under $1.10	11	2	13	4.2
$1.10 and under $1.20	64	113	177	57.6
$1.20 and under $1.30	65	8	73	23.8
$1.30 and under $1.40	33	2	35	11.4
$1.40 and under $1.50	1		1	.4
Total	179	128	307	100.0
Average hourly rate	$1.19	$1.14	$1.17	
Rate change, prewar to May 1945:[2]				
Decrease	13		13	7.5
No change	18		18	10.4
Increase of—				
Under 10 percent	24		24	13.9
10 and under 25 percent	16	2	18	10.4
25 and under 50 percent	20	6	26	15.0
50 and under 75 percent	9	4	13	7.5
75 and under 100 percent	5	4	9	5.2
100 and under 200 percent	13	21	34	19.7
200 and under 300 percent	4	7	11	6.4
300 percent and over	1	6	7	4.0
Total	123	50	173	100.0
Rate change, war period (1942–43 to May 1945):[3]				
Decrease		5	5	6.8
No change	3	42	45	60.6
Increase of—				
Under 10 percent		7	7	9.5
10 and under 25 percent	1		1	1.4
25 and under 50 percent	3		3	4.1
50 and under 75 percent		5	5	6.8
75 and under 100 percent				
100 percent and over	1	7	8	10.8
Total	8	66	74	100.0

[1] Excludes overtime at premium rates.

[2] Includes only workers for whom a definite beginning rate was available, between January and December 1941. If more than one rate was recorded during this period, the rate dated nearest January was used.

[3] Excludes workers tabulated under preceding head, but includes all other workers for whom a beginning rate was available for the period between January 1942 and December 1943.

Although most of the men had prewar employment experience, the wage-earner status of many women was relatively recent. For workers who entered the labor market between January 1942 and December 1943 wage-rate increases were few, largely because they held the same jobs until the plant closed. The data collected indicate that for 61 percent of the workers reporting no prewar earnings, the hourly rate remained unchanged.

Gross weekly earnings averaged $46.02 for women and $48.19 for men at the end of May 1945; for both groups combined, the average was $47.29 (table 3). From data supplied by 294 workers it was found that average weekly deductions for income taxes ($5.62), social security taxes (47 cents), and union dues [15] (25 cents) totaled $6.34. Applying the latter figure to the average gross weekly earnings of the 307 workers, average "take-home" pay (exclusive of war bond deductions) was $40.95 in the period surveyed. It should be recognized that by the end of May 1945 the normal workweek had been reduced from 54 to 40 hours and few of the men and women at Willow Run were working overtime. In 1943 and 1944, on the other hand, there were many weeks when the hours actually worked exceeded 60 for most men. During those busy times, not uncommonly, workers

TABLE 3.—*Gross Weekly Earnings of Willow Run Workers in May 1945, and Change in Earnings for Specified Periods*

Item	Men	Women	Total	
			Number	Percent
Gross weekly earnings:				
Under $35		1	1	0.3
$35 and under $40	4	3	7	2.3
$40 and under $45	16	35	51	16.6
$45 and under $50	93	79	172	56.0
$50 and under $55	60	6	66	21.5
$55 and under $60	1	2	3	1.0
$60 and under $65	4		4	1.3
$65 and over	1	2	3	1.0
Total	179	128	307	100.0
Average gross weekly earnings	$48.19	$46.02	$47.29	
Change in earnings, prewar to May 1945: [1]				
Decrease	30	1	31	17.9
No change	8	1	9	5.3
Increase of—				
Under 25 percent	39	4	43	24.8
25 and under 50 percent	19	5	24	13.9
50 and under 75 percent	7	4	11	6.4
75 and under 100 percent	9	4	13	7.5
100 and under 125 percent	5	5	10	5.8
125 and under 150 percent		7	7	4.0
150 percent and over	6	19	25	14.4
Total	123	50	173	100.0
Change in earnings, war period (1942–43 to May 1945): [2]				
Decrease	3	24	27	36.5
No change	3	31	34	46.0
Increase of—				
Under 25 percent		2	2	2.7
25 and under 50 percent	1	1	2	2.7
50 and under 75 percent		2	2	2.7
75 and under 100 percent		1	1	1.3
100 percent and over	1	5	6	8.1
Total	8	66	74	100.0

[1] Includes only workers for whom beginning earnings were available between January and Decemper 1941.
[2] Excludes workers tabulated under preceding head, but includes all other workers for whom beginning earnings were available for the period between January 1942 and December 1943.

[15] In accordance with the closed-shop contract and check-off, all workers had $1.00 deducted for union dues from one of their pay checks each month.

whose scheduled weekly earnings were around $48 had grossed over $70. By May 1945, however, gross weekly earnings declined, owing to the sharp reduction in hours worked.

Because of the increase in the hourly rate of compensation realized by the majority of the workers at Willow Run, their gross weekly earnings for a 40-hour week in May 1945 were higher than during the year 1941. This statement, of course, refers only to those workers who had prewar employment experience. More than three-fourths of the workers with prewar experience in industry had an advance in earnings; for one-fourth the increase was less than 25 percent, for one-fourth the gain was between 25 and 100 percent, and for an equal proportion the increase was over 100 percent. Eighteen percent of the workers showed a decline in weekly earnings, and 5 percent indicated no change.

It is important to emphasize that many of the increases in weekly earnings, just as many of the gains in hourly rates, reflect a rise from low prewar levels. For the workers whose earnings were relatively high before the war, the improvement in wages was less remarkable. Moreover, it is well known that especially in war-crowded centers, such as the Detroit area, the costs of goods and services rose substantially, thus dissipating some of the increase in earnings.

Postwar Prospects

When the workers were interviewed for this study, the shut-down of Willow Run appeared to be a certainty although numerous rumors were current regarding the probable fate of the great plant. Some of these rumors had it that the plant would be turned into a vast exhibition center, others that it would be reopened for production of industrial equipment of various sorts. It is probable that none of the workers anticipated the reopening under Kaiser management, which was not announced publicly until late in September.

It will be accepted, therefore, that, when the 307 workers were queried at the end of May 1945 regarding their postwar plans, practically all believed that Willow Run, once shut down, would not be a possible source of employment for them, at least in the foreseeable future. However, despite the fact that the thousands of men and women who took jobs at Willow Run knew that the plant was "expendable," the imminent lay-off was bewildering and disturbing. Not all of the workers were prepared to say what their postwar expectations for employment were; many were confused and uncertain.

The case of Mrs. B, who was a drug-store clerk before she became a riveter at Willow Run, reflects this confusion. The interviewer who spoke with this worker shortly after her lay-off from the plant, reported:

> Mrs. B. had the idea of going into business but soon discarded the notion because of the difficulty of obtaining merchandise. She has also been considering the possibility of applying for widow's compensation although she has tried to be independent as long as possible. For the present, at any rate, she is going to remain at her present location and as long as she remains unemployed, she will take care of her home. The only active seeking for a job that she is doing is registering at the unemployment compensation office.

Of the group of 307 workers, 11 men and 12 women were unable to reply to the question of their postwar plans for employment. It is also

probable that some of the 35 workers who indicated that they did not expect to change jobs but planned to continue in their present occupations were still confused as to their opportunities as well as their desires for employment. Table 4 summarizes the replies received in response to the question of expected job changes in the postwar period. This table also shows the usual (i. e., prewar) occupations of the workers surveyed and their prospective occupations.

Nearly two-thirds of the workers indicated they expected to change occupations upon leaving the plant. The proportion of men who intended to change (76 percent) was considerably higher than that of women (52 percent). This marked difference between the plans of men and women may have been due to differences in appraisal of employment opportunities in other fields or to the fact that the necessity to plan ahead was less urgent for women than men.

The survey disclosed that not all of the women who before the war were housewives or engaged in other nongainful employments expected to leave the labor market. Only 28 of the 48 women who had no gainful occupation in January 1941 reported that they would return to their former status. The total number who planned to retire as wage earners (47) was almost the same as the number in that group (48) at the beginning of the war. Five of the women who intended leaving were clerks or sales employees, 1 was a service worker, and 10 were factory workers.

TABLE 4.—*Postwar Job Changes Planned by Willow Run Workers*

Prospective job changes	Total	Usual occupational group						
		Professional and semi-professional	Proprietors, managers, and officials	Farmers and farm laborers	Clerical, sales, and kindred workers	Service workers	Craftsmen and manual workers	No previous gainful occupation
Men	179	5	5	11	28	4	126	
No postwar job changes planned	29			1	7	1	20	
Change of job planned	136	4	5	8	19	2	98	
Professional and semiprofessional	3	3						
Proprietors, managers, and officials	11		1		3		7	
Farmers and farm laborers	8			3			5	
Clerical, sales, and kindred workers	16				9	1	6	
Service workers	1						1	
Craftsmen and manual workers	89	1	3	5	5	1	74	
Not reported	8		1		2		5	
Expect to leave labor market	3	1					2	
Postwar plan not reported	11			2	2	1	6	
Women	128	3	1	2	22	12	40	48
No postwar job changes planned	6			1		2	3	
Change of job planned	66	3	1	1	12	8	24	17
Farmers and farm laborers	1							1
Clerical, sales, and kindred workers	20	1	1		9	1	5	3
Service workers	3			1		1	1	
Craftsmen and manual workers	20	2			1	2	9	6
Not reported	22				2	4	9	7
Expect to leave labor market	44				5	1	10	28
Postwar plan not reported	12				5	1	3	3

This survey revealed that approximately the same number of workers were planning to remain in the labor market as were present at the outset of the war, but a considerable shifting between occupations was contemplated. On the basis of the groupings shown in table 4, nearly 35 percent of the workers intended to change from their usual prewar occupation to another. This did not include prospective interindustry changes; thus, if a worker indicated that he expected to return to his usual job as polisher in a furniture factory, he was classified in the same category—craftsman and manual worker.[16] If the same worker reported he expected to open up a gasoline station, his prospective occupational group was listed as proprietor. Because the data do not reflect contemplated movements from one type of factory or industrial employment to another, it is all the more remarkable that so many workers intended to change occupations.

Among those who intended to leave the labor market, more than half were women whose war work was considered temporary, 2 men and 2 women intended to return to school; the remaining workers were of the older age groups. The desire to increase income was undoubtedly a strong motive inducing change, although the workers differed in their evaluation of the best means to do this. A. F. indicated that "going into business for himself was the only way to make money." Another worker stated that "if he could get the money and the right partners, he would like to open his own machine shop."

Evidence collected in the course of this survey, as well as by the U.S. Employment Service in interviewing workers laid off at Willow Run, points to a strong dislike on the part of some workers of the discipline and regimentation encountered in large industrial establishments. One of the men included in this survey reported that "he was sick of working in a plant and did not like to punch a time clock." A worker who intended to return to a farm "justs wants to get away from factory work." Another, who expected to open up a gasoline station, "likes to be his own boss." R. J., another Willow Run worker interviewed, was probably not typical in his desire to shift jobs from factory to clerical work. The reason he gave was that he was "tired of getting cut and dirty hands."

For practically all of the workers, employment of some sort was necessary to their postwar livelihood. In the confused and uncertain situation which these 307 workers found themselves at the end of May 1945, with Willow Run's shut-down imminent and new employment opportunities uncertain, it would not be surprising if events forced a change in plans. What happened to these workers, the work they found, and the wages they earned will be the subject of further study and report by the Bureau.

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[16] An attempt was made to classify the workers surveyed according to the industry to which they intended to return. Owing to the fact that a large number did not reply to this question, the data regarding contemplated interindustry shifts were not sufficiently complete to warrant tabulation.

First Conference of United Nations Organization on Food and Agriculture [1]

THE first meeting of the United Nations Conference on Food and Agriculture was held at Quebec for 2½ weeks beginning October 16, 1945. The Food and Agriculture Organization (FAO) is the first of the new, permanent United Nations organizations to come into existence. Preliminary plans for the organization were laid at the conference held at Hot Springs in May 1943, and an Interim Commission on Food and Agriculture was established at that time to draw up a constitution and make detailed plans.

Forty-two nations joined the organization as full members at Quebec. The Union of Soviet Socialist Republics, the Byelorussian Soviet Socialist Republic, the Ukrainian Soviet Socialist Republic, and Argentina were observers at the Conference. The representative of the Union of Soviet Socialist Republics made it clear that the USSR endorses the idea of international cooperation to improve agricultural production and better the food situation of the United Nations, but said that the organizational forms of FAO still require study by his government, and that it would also be necessary to consult the constituent republics, which have large agricultural interests. The USSR therefore abstained from becoming a member at this time.

The United States delegation to the Conference was headed by Clinton P. Anderson, Secretary of Agriculture, and William L. Clayton, Assistant Secretary of State. It was not possible for them to attend the entire session, and Howard R. Tolley, Chief of the Bureau of Agricultural Economics of the Department of Agriculture and United States member of the Interim Commission on Food and Agriculture represented the United States in their absence. The delegation included four members of Congress as advisers—Senator Elmer Thomas, Senator Raymond E. Willis, Congressman John W. Flannagan, Jr., and Congressman Clifford R. Hope. Other advisors, in addition to experts on nutrition, health, agriculture and trade, were Albert S. Goss, Master of the National Grange; Edward A. O'Neal, President of the American Farm Bureau Federation; James G. Patton, President of the National Farmers Union, and Miss Anna Lord Strauss, President of the National League of Women Voters.

Purposes of the Organization

It was recommended at the Hot Springs Conference that the Interim Commission on Food and Agriculture should prepare a plan for a permanent organization in the field of food and agriculture having the following functions:

(a) The promotion of scientific, technological, social, and economic research.

(b) The collection and dissemination of information and provision for the exchange of services.

(c) The submission to member governments and authorities of recommendations for action with regard to the following: Nutrition;

[1] Prepared by Faith M. Williams, Chief of the Bureau's Foreign Labor Conditions Staff.

standards of consumption of food and other agricultural products; agricultural production, distribution, and conservation; statistics and economic studies in the field of agriculture and food, including the study of the relation of agriculture to world economy; education and extension work in the field of food and agriculture; agricultural credit; and problems of agricultural population and farm labor.

In addition, the Interim Commission was directed to consider the desirability of assigning to the permanent organization functions in the field of (a) development of agricultural resources and orientation of production, where necessary; (b) agricultural commodity arrangements; (c) agricultural cooperative movements, (d) land tenure, and (e) other subjects on which recommendations have been made by the Conference. The Interim Commission also was authorized to consider the initiation of preliminary statistical investigations and research into the problems with which the permanent organization will deal.

Recommendations of Conference

Proposals for carrying out these functions, prepared by the Interim Commission, were considered at Quebec by a series of committees and the broad outlines of the Hot Springs program were confirmed. The more important recommendations of these committees as to the most urgent of the tasks to be undertaken may be summarized as follows:

War-damaged countries.—The FAO does not have the power to administer relief programs, but it is acutely conscious of present food needs in devastated areas, and much of its work in the immediate future will be directed toward giving what assistance it can to countries where the war has disorganized the production and distribution of food. It was recommended by the Conference that the FAO should make a rapid survey of available food resources and the requirements of necessitous countries, arrange for an exchange of information regarding local surpluses and world supplies, assist in the direction of food supplies to places where they are most needed, and provide experts on urgent agricultural production programs.

Industrially developed countries.—The Conference recognized that there is no country in which techniques of agricultural production could not be improved, but noted that in the highly industrialized countries the emphasis is on the better adjustment of production and consumption. It was recommended that the FAO, in collaboration with other international organizations, should study the effect on food consumption of social and economic policies and measures, including legislation to secure minimum wages and social security, production to other commodities for which demand is stronger. family allowances, taxation of different kinds, food subsidies, and special feeding programs, and that it should seek constructive solutions of problems of maintaining purchasing power, meeting the nutritional deficiencies of vulnerable groups and low-consumption groups or areas, stimulating new uses for agricultural products, and reorienting

Less-developed countries.—In regard to improving nutrition in less-developed countries, the Conference recommended that the FAO

be prepared to assist governments desiring to select demonstration areas and to develop in them all resources for the improvement of nutrition, not only by education and by special food distribution schemes but also by improving techniques of food production and particularly of protective foods such as milk, vegetables, fruit, fish, and eggs. It was recognized that in many of these countries the development of industry and of forestry must go hand in hand with the development of agriculture, to provide for the employment of persons now on farms who cannot be employed efficiently in agriculture. It was also recommended that FAO assist such countries in improving the marketing of their agricultural products.

National nutrition organizations.—It was recommended that each government develop a national nutritional organization to report periodically to the FAO on progress in the field of nutrition and to make recommendations to the government. The reports of these organizations would clarify the approach to the problem and serve "as a guide and stimulus to member nations." These organizations, according to the recommendations at Hot Springs, would be composed of authorities on health, nutrition, economics, and agriculture together with administrators and consumers' representatives, etc., and should be provided with adequate facilities for the efficient conduct of their work. It was pointed out at Quebec that in many countries progress is retarded because of the lack of knowledge among administrators, doctors, health workers, agricultural experts, social workers, etc., and that there is an insufficient number of specialized nutrition workers. In cooperation with the National Nutrition Organizations, the FAO can encourage and develop appropriate teaching and training in nutrition in existing national institutions.

International trade.—The Conference recognized that many countries which produce agricultural products for export faced serious difficulties during the interwar period because of the decline in international trade which accompanied the world depression, and that the expansion of production in some countries to meet deficits resulting from World War II will require the reorientation of production and trade. It recommended that "if, as seems probable, other bodies are charged with the administration of international commodity agreements FAO should nevertheless participate in the preparation, negotiation and administration of such agreements and provide the bodies concerned with statistical and other analyses of commodity situations."

Administration

Sir John Orr, Director of the Rowett Institute in Aberdeen, Scotland, for 25 years, was elected Director General of the FAO. He was elected a member of the House of Commons for the University of Glasgow on the Labor Party platform in the 1945 elections.

The FAO will develop its program under the general direction of an Executive Committee composed of representatives from Belgium, Brazil, Canada, China, France, Haiti, India, Iraq, Mexico, New Zealand, Norway, Poland, South Africa, the United Kingdom, and the United States.

Occupational Outlook

Postwar Outlook for Physicians[1]

Summary

IN VIEW of a prospective demand for medical services well in excess of the prewar demand, and the wartime attrition of medical manpower, the postwar outlook for physicians appears promising nationally, and particularly in the numerous States and rural communities in which the numbers of physicians have fallen considerably short of the need for medical services and the increase in population.

The long-term rate of increase in the medical labor force has not kept pace with the increase in population. From 1910 to 1940, there was a net addition of 13.4 percent to the medical labor force, as compared with a 43.2-percent increase in population. The decrease in numbers of physicians relative to population is somewhat mitigated by improvements in means of transportation—of particular importance in rural areas. The relatively slow growth of the number of physicians in the 3 decades preceding the war was a reflection of the fact that a large proportion of new entrants into the profession each year merely replaced those dying or retiring. The replacement needs have been affected by the age composition of the medical labor force. The number of physicians 65 years and over rose from 7.9 percent of the total in 1920 to 10.1 percent in 1930 and to 11.5 percent in 1940.

Over half of all physicians resided in 8 States in 1940. There were 21 States in which, although the population increased between 1920 and 1940, the number of physicians actually decreased. In 25 States the number of physicians increased, but in all except 8 the population increased faster than the number of physicians. In the remaining 2 States the relative decrease in physicians exceeded the decrease in population. There was wide disparity in the population-physician ratio in 1940, ranging from 511 persons per physician in New York State to 1,635 persons in Mississippi.

Owing to a comparatively smaller increment of new entrants, the States with a greater number of persons per physician likewise have a greater proportion of older physicians, whose service capacity is lower.

The major factors which affected the location of physicians before the war were availability of purchasing power for medical care as reflected in income levels, the general trend toward urbanization, the availability of modern hospitals, and the proximity of medical schools. The war has accentuated the wide variations in the population-physician ratios among the various States.

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[1] Prepared in the Bureau's Occupational Outlook Division by Judith Grunfel.

The postwar demand for physicians is bound to exceed the prewar demand, because of the increase in population, programs for medical care of veterans, the probability of larger armed forces, and the likelihood that there will be more adequate medical care for the general population.

The number of physicians will not increase enough within a few years after the war sufficiently to meet the increased needs for their services. Deaths of some older physicians, the retirement or reduced service capacity of others in the older groups, and mortality of younger physicians serving with the armed forces will have offset at least two-thirds of the gains represented by the new physicians trained in the decade—even though training was accelerated during the war.

There will be shortages of physicians in some of the specialized fields particularly. The postwar demand for psychiatrists may considerably exceed the available supply, owing to the mental disturbances induced by modern warfare. Shortages of psychiatrists for rehabilitation of veterans already discharged are reported even in the States with large numbers of physicians. A demand for more physicians with training in obstetrics and pediatrics may arise from the extension of maternity and child-care facilities. The need for specialists in industrial medicine is also suggested.

Geographically, postwar needs for physicians appear to be greatest in those States in which the actual number of physicians declined during the two decades preceding the war, particularly because of the high average age of the physicians remaining in those States.[2]

Prewar Trends

GROWTH IN NUMBER OF PHYSICIANS RELATIVE TO POPULATION

The medical profession is the fourth largest among professional occupations in the United States; only teaching, engineering, and law claimed more workers in 1940. The 1940 American Medical Directory listed 175,163 physicians, including nearly 10,000 designated as "retired" and "not in practice."[3] This indicates that slightly over 165,163 physicians were active in 1940, which approximates the census figure of 165,629 physicians and surgeons in 1940.

During the three decades before the war the number of physicians had increased more slowly than total population. In 1910 there were 151,132 gainful workers reported as physicians and surgeons, but this included osteopaths—a group which was not shown separately. If it may be assumed that the number of osteopaths in 1910 was no greater than in 1920 (5,030), the number of physicians in 1910 would have been about 146,000. The increase between 1910 and 1940 in the number of physicians was therefore about 13.4 percent, as compared with a 43.2-percent increase in population over the same period.

Trends in the number of women in the profession may be indicated in part by the fact that the 7,219 women physicians in 1920 constituted 4.8 percent of the total; by 1940 their number had increased to 7,708, which was 4.6 percent of the total number of physicians.[4]

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[2] A discussion of earnings of physicians will be included when this article is reprinted as a bulletin.
[3] Public Health Reports (Washington), March 3, 1944 (p. 286).
[4] A full discussion of the outlook for women physicians is presented in U. S. Women's Bureau Bulletin 203, No. 7: The Outlook for Women in Occupations in the Medical Services: Women Physicians.

RISING PROFESSIONAL STANDARDS AND TRENDS IN SUPPLY OF GRADUATES

A general trend toward raising the low standards of professional training and licensure, which prevailed at the beginning of the century, became most apparent in the medical profession after the American Medical Association established the Council on Medical Education and Hospitals in 1904. In its first classification of medical schools in 1907 the latter reported numerous substandard schools.

The Carnegie report on medical education, published in 1910, noted that many schools required "little or nothing more than the rudiments or the recollection of a common-school education," and concluded that a 2-year college training was the minimum basis upon which modern medicine could be successfully taught.[5] From 1918 accredited medical schools required premedical training of at least 2 years of college work, including physics, chemistry, and biology.

At the same time that standards were rising, the number of schools and enrollments therein were declining. As table 1 indicates, graduations reached their lowest point in 1922, rising gradually thereafter

TABLE 1.—*Number of Accredited Medical Schools, Students, and Graduates in the United States, 1905–44* [1]

Year	Number of schools	Number of students [2]		Number of graduates		
		Total	Women	Total	Women	
					Number	Percent of total
1905	160	26,147	1,073	5,606	219	4.0
1910	131	21,526	907	4,440	116	2.6
1915	96	14,891	592	3,536	92	2.6
1920	85	13,798	818	3,047	122	4.0
1921	83	14,466	879	3,186	151	4.7
1922	81	15,635	989	2,529	154	6.1
1923	80	16,960	1,030	3,120	214	6.9
1924	79	17,728	954	3,562	214	4.3
1925	80	18,200	910	3,974	204	5.1
1926	79	18,840	935	3,962	212	5.4
1927	80	19,662	964	4,035	189	4.7
1928	80	20,545	929	4,262	207	4.9
1929	76	20,878	925	4,446	214	4.8
1930	76	21,597	955	4,565	204	4.5
1931	76	21,982	990	4,735	217	4.6
1932	76	22,135	955	4,936	208	4.2
1933	77	22,466	1,056	4,895	214	4.4
1934	77	22,799	1,020	5,035	211	4.2
1935	77	22,888	1,077	5,101	207	4.1
1936	77	22,564	1,133	5,183	246	4.7
1937	77	22,095	1,113	5,377	238	4.4
1938	77	21,587	1,161	5,194	237	4.6
1939	77	21,302	1,144	5,089	260	5.1
1940	77	21,271	1,145	5,097	253	5.0
1941	77	21,379	1,146	5,275	280	5.3
1942	77	22,031	1,164	5,163	279	5.4
1943	76	22,631	1,150	5,223	241	4.6
1944	77	23,529	1,176	[3] 5,134	239	4.7
1944 (second session)	77	24,666	1,141	5,169	252	4.9
1945 (to June 30)	77	24,028	1,352	5,136	262	5.1

[1] Data are from Journal of the American Medical Association (Chicago), August 13, 1921, August 19, 1922, August 18, 1923, August 16, 1929, August 19, 1944, and September 1, 1945. Figures relate to schools approved by AMA Council on Medical Education and Hospitals.

[2] Includes figures for schools of the basic medical sciences.

[3] Refers to the academic year between July 1, 1943, and June 30, 1944.

[5] Carnegie Foundation for the Advancement of Teaching, Bulletin No. 4: Medical Education in the United States and Canada, by Abraham Flexner (New York, 1910), p. 12.

to a peak in 1937. However, the annual average between 1930 and 1939 (5,011) was lower than the number graduated in 1905.

Opinion varies in the medical profession with respect to the number of physicians to be trained. The Commission on Medical Education, established in 1925 by the Association of American Medical Colleges for studying "the educational principles involved in the training and licensing of physicians," stated in its final report (1932):[6]

> There are in the United States approximately 156,440 licensed physicians, or 1 to 780 of the population. In European countries the ratio is in the neighborhood of 1 to 1,500. Assuming that 1 to 1,200 would be a correct ratio for this country, we now have an excess of 25,000 doctors. The recognized medical schools of the United States are graduating about 5,000 a year. Graduates from unapproved schools, together with those from Canada and Europe, bring the annual increment to the medical profession up to 5,400. At this rate the number of physicians will increase more rapidly than the general population, so that by 1950 the ratio of physicians to population will be 1 to 750. . . . Owing to the excessive number of applicants, the medical schools are in a position to make a selection of the more desirable students, which should be based on character, personality, intelligence, ability, scholastic achievements.

The former director of that commission, Dr. Willard C. Rappelye, in hearings before a Senate committee in 1944, expressed the opinion that the number of physicians available "is entirely adequate for the medical needs of peacetime and that there is no justification for any substantial increase in the output of the medical schools."[7]

Another point of view was expressed by an editorial in the New England Journal of Medicine (published by the Massachusetts Medical Society), March 9, 1939, as follows:

> It is sometimes claimed that the medical profession is overcrowded. The proponent of this claim is usually a member of the medical profession and the ground for the complaint is that there are many doctors, far too many, who are not able to make a comfortable living. If one employs in other fields the line of reasoning which has led to this conclusion, one may well declare that the United States, not to speak of the earth, is overcrowded. * * *
>
> It has been said that medical schools should decrease their enrollments because there are too many doctors. If they ought to become smaller, it is not for this reason. The size of a medical school should be determined primarily by the number of students who can be educated there at the highest possible level of quality of education. This, one must remember, is not a fixed level.
>
> From bare statistical comparisons with other countries one might conclude, as has been done, that the United States has too many doctors per thousand of population, and also by the same token, too many telephones, too many automobiles, too many bathtubs. It is a fact that no one knows how many physicians there should be in the United States and any arbitrary limitations might prove to be a serious mistake. Perhaps if there were better physicians, even more would be needed to care adequately for the population. Our health is far from perfect.

In 1935; the AMA Council on Medical Education issued "a general warning against the admission of larger classes than can properly be accommodated or than can reasonably be expected to satisfy scholastic standards."[8]

Enrollments of freshmen decreased from 6,457 in 1933–34 to 5,791 in 1937–38.[9] In reference to the decrease in total enrollments from 22,888 medical students in 1935 to 21,587 in 1938, it was pointed out that "classes in subsequent years in many cases will be further reduced."[10]

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[6] Journal of American Medical Association, December 24, 1932 (pp. 2206–2208).
[7] Wartime Health and Education, Hearings before Subcommittee of Senate Committee on Education and Labor (77th Cong., 2d sess.), on S. Res. 74, part 6 (p. 2135), Washington, 1944.
[8] Journal of American Medical Association, August 31, 1935 (p. 686).
[9] Idem, August 26, 1939 (p. 770).
[10] Idem, April 29, 1939 (p. 1717).

The trend toward raising premedical training requirements may be illustrated by the fact that of the 77 schools accredited by the Council on Medical Education and Hospitals, 45 in 1938–39, and 56 in 1941 required 3 years of college, 6 required a baccalaureate degree prior to admission to medical school, 5 admitted students with 3 years of college work if the baccalaureate degree was conferred in absentia at the end of the first year of medicine, one required 4 years, and only 9 schools accepted in 1941 the minimum of 2 years of college training. Actually, of the 5,134 medical graduates between June 1943 and 1944, 4,131, or 80 percent, held a baccalaureate degree.[11] Since there were, on the average, two applicants for every position in a first-year medical class, and in some schools considerably more than this number there was a "pressure on all students who want 'to play safe' to take more than the minimum premedical requirements whether they are interested in science or not," according to James B. Conant, President of Harvard University.[12]

The rising professional standards are also reflected in the licensure requirements. Most States require graduation from a reputable medical school, the passing of a licensing examination before a State board, and annual registration in the community of practice. In addition, a hospital internship is required in 21 States, the District of Columbia, Alaska, Hawaii, and Puerto Rico.[13] Those who choose to specialize in some branch of medicine—an increasing proportion—must also undertake extended postgraduate work. As early as 1933, the American Medical Association passed a resolution favoring the creation of examining boards in medical specialties. By 1941 sixteen boards for the certification of specialists were reported.

The high standards established by the examining boards have contributed greatly to the admirable achievements of American physicians and surgeons. On the other hand, Dr. R. L. Wilbur, addressing the Thirty-Fourth Annual Congress on Medical Education and Licensure in February 1938, stated:

> The greatest danger, both to the public and to the profession, lies in the tendency of some of the boards [for examination of specialists] to conceive of their function in terms of a medieval guild, each rigidly to restrict the activities of its own members and to seek first to promote the welfare, financial and professional, of its own group. The shortsightedness of such a policy is, of course, apparent. Unless these boards are broadminded enough to place the public interest ahead of their own immediate apparent profit, they will serve no useful purpose and must soon be superseded by some other agency.[14]

Altogether, since the beginning of the century, premedical and medical training have been lengthened from about 3 or 4 years to some 8 or 9 years including an internship year (costing the student at least $6,000). Notwithstanding such stringent requirements, some 12,000 persons applied annually for admission to approved medical schools during the thirties, and almost half of them were rejected. Some of the rejected applicants went abroad to obtain medical education; in the decade of the thirties, on the average 290 graduates of European schools (including American citizens and immigrants from their native countries) were admitted annually to medical practice in the United States.

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[11] Journal of American Medical Association, August 19, 1944 (p. 1126).
[12] Idem, April 29, 1939 (p. 1655).
[13] U. S. Office of Education, Medical Guidance Leaflet No. 6, 1941 (p. 3).
[14] Journal of American Medical Association, April 23, 1938 (p. 1328).

Medical schools not approved by the American Medical Association added 173 licensed physicians annually on the average during the five-year period from 1934 to 1938. During the same period 545 graduates of osteopathic schools were licensed in a few States which admit those graduates to the practice of medicine or surgery.[15] During the same decade the annual supply of licensed new entrants from various sources averaged as follows:

	Graduates
From all schools	5,584
From approved schools	5,011
From unapproved schools	173
Graduates from osteopathic schools (licensed as physicians and surgeons)	110
Graduates from European schools	290

Thus about 90 percent of physicians licensed during the thirties were graduates of medical schools approved by the American Medical Association.

As a result of the developments in training and licensing of physicians, the number of new entrants to the profession grew smaller in relation to the total size of the profession; the number of graduates per 1,000 registered physicians dropped from 46 in 1906 to 21 in 1923, rose to 30 during the thirties, and amounted to 28 in 1941–42.

In view of these trends, and the intense competition for entrance to medical schools, persons considering medical training should inform themselves not only as to the minimum premedical requirements of the schools to which they apply, but also as to the viewpoint of the schools on the desirable optimum of premedical preparation.

EFFECT OF TRENDS IN SUPPLY OF NEW PHYSICIANS UPON GROWTH OF MEDICAL PROFESSION

The long-term trend in graduations relative to available numbers of physicians has affected the age composition of the practicing physicians. This in turn has affected the service capacity of the profession and the rate of deaths and retirements from practice.

Owing to the absolutely and relatively smaller supply of potential entrants to the profession since 1905, as well as to lengthening of the average life span, the number of physicians 65 years of age and over, as shown by census data, constituted 7.9 percent of the total in 1920, and 10.1 percent in 1930. In 1940 the 18,966 physicians of this age group were 11.5 percent of the total. This indicates that nearly 12 out of every 100 physicians and surgeons belonged to the age group referred to usually as the age of retirement or partial activity.

This long-range trend in the age distribution of physicians affected the service capacity of the available medical labor force at the outbreak of war. The median age of all male physicians was 44.1 years in 1940—the highest among professional men, except for veterinarians and clergymen. As "the average patient load decreases regularly with advanced age above 45 years," [16] half of the physicians reported as actively employed in 1940 were therefore approaching the point beyond which the patient load would be expected to decrease.

The replacement needs caused by death of physicians have become a major factor affecting medical manpower.

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[15] Journal of American Medical Association, April 29, 1939 (p. 1717).
[16] Public Health Reports, September 3, 1943 (p. 1344).

On the average, about 3,800 physicians were lost to the profession each year from 1923 to 1938, death being the major factor.[17] During this 15-year period new entrants to the profession totaled 81,000,[18] or an average of 5,400 annually, indicating that 70 percent of new entrants were needed to replace losses to the profession caused by death and retirement. The net addition to the profession averaged, therefore, 30 percent of all new entrants between 1923 and 1938.

Toward the end of the thirties replacement needs caused by death were increasing. Both for 1936 and for 1938 it was reported that "the number removed by death annually approximates 4,000."[19] This indicates that over 70 percent of the new entrants prior to the outbreak of the war were necessary to make up these losses.

GEOGRAPHICAL DISTRIBUTION OF PHYSICIANS

There are wide disparities among the various parts of the country in the numbers of physicians relative to population, not only as between States, but also as between rural and urban areas.

The U. S. Public Health Service study covering the period 1923-38 points out that—

> In States with expanding physician totals, the losses from the profession during the period represented 34 per 100 physicians in 1923; there was no significant change through migration, and 70 new registrants were located in these States in 1938 for every 100 physicians residing therein in 1923. The median age of physicians in these States was 43 years. At the other extreme, States with net decreases in physicians during the interval lost 38 from the profession and in addition realized a net loss of 3 physicians through migration, but obtained only 31 new registrants for every 100 physicians in 1923. In these States the median age of physicians in 1938 was 53 years. These large differences in the recruitment of young physicians and the resulting contrast in age distributions among the . . . States suggest that unless methods are devised and employed to promote an increased acquisition of young physicians in States heretofore showing net losses, the disparities may become more pronounced in years to come.[20]

The considerably higher median age in States in which losses to the profession exceeded replacements indicates a considerably higher ratio of older physicians with lower service capacity in the numerous States affected by the cumulative deficit of replacements. This cumulative deficit of younger physicians should be kept in mind in considering the population-physician ratios in the States in which numbers of physicians were decreasing.

Census data indicate that in 21 States with increasing population the number of physicians decreased during the two decades from 1920 to 1940 (table 2). In these 21 States, in which the trend in the number of physicians ran contrary to population trends, the population totaled more than 37 million in 1940, or over 28 percent of the population of the United States.

In 25 States and the District of Columbia, the number of physicians increased between 1920 and 1940, but only in 8 States did the rate of increase in the number of physicians exceed the rate of growth of the population. In the remaining 2 States—Montana and North Dakota—the relative decrease in physicians exceeded that in popula-

[17] Public Health Reports, March 3, 1944 (p. 282).
[18] Idem, November 20, 1942 (p. 1753).
[19] Journal of American Medical Association, April 29, 1939 (p. 1707).
[20] Public Health Reports, November 20, 1942 (p. 1757).

tion. Thus in 39 of the 48 States and in the District of Columbia, the number of people per physician increased between 1920 and 1940. In one State it remained unchanged, and in 8 States it decreased.

TABLE 2.—*State Populations in Relation to Numbers of Physicians, 1920–40* [1]

State	Percent of increase in population, 1920–40	Percent of increase or decrease in number of physicians, 1920–40	Population per physician	
			1920	1940
Increase in population, decrease in physicians:				
Alabama	20.6	−17.9	1,036	1,523
Arkansas	11.3	−28.9	743	1,161
Colorado	19.5	−7.3	530	684
Georgia	7.9	−22.4	879	1,222
Idaho	21.5	−14.0	900	1,271
Indiana	17.0	−9.3	685	883
Iowa	5.6	−17.9	674	867
Kansas	1.8	−18.7	696	871
Kentucky	17.8	−17.1	785	1,115
Maine	10.3	−19.2	696	951
Mississippi	22.0	−19.4	1,081	1,635
Missouri	11.2	−17.4	563	758
Nebraska	1.5	−18.8	667	834
Nevada	42.4	−5.9	506	766
New Hampshire	10.9	−11.7	698	876
Oklahoma	15.2	−15.3	767	1,043
South Carolina	12.8	−7.1	1,239	1,505
South Dakota	1.0	−22.5	979	1,276
Tennessee	24.7	−15.4	723	1,066
Vermont	1.9	−18.4	623	778
Wyoming	29.0	−12.7	748	1,105
Increase in population, increase in physicians:				
Arizona	49.4	+47.2	877	890
California	101.6	+60.9	503	630
Connecticut	23.8	+44.6	803	688
Delaware	19.5	+20.7	811	803
District of Columbia	51.5	+41.6	357	382
Florida	95.9	+43.4	677	925
Illinois	21.8	+7.6	604	683
Louisiana	31.4	+20.6	924	1,006
Maryland	25.6	+25.1	616	619
Massachusetts	12.1	+18.2	642	608
Michigan	43.3	+37.7	821	855
Minnesota	17.0	+20.0	840	819
New Jersey	31.8	+68.8	901	704
New Mexico	47.6	+1.2	854	1,245
New York	29.8	+55.9	614	511
North Carolina	39.6	+20.8	1,197	1,383
Ohio	19.9	+.8	647	770
Oregon	39.1	+12.4	631	781
Pennsylvania	13.5	+13.6	765	765
Rhode Island	18.0	+25.3	817	770
Texas	37.6	+2.7	765	1,025
Utah	22.5	+7.8	876	995
Virginia	16.0	+9.6	962	1,018
Washington	28.0	+5.4	683	830
West Virginia	29.9	+.5	850	1,099
Wisconsin	19.2	+22.5	947	922
United States	24.6	+14.2	729	796

[1] Source: Census of Population 1920, Occupations; Census of Population 1940, United States Summary; Vol. III, The Labor Force, Parts 3, 4, 5, Table 13. Percentages have been computed.

The population-physician ratio ranged from 511 persons per physician in the State of New York in 1940 to 1,635 persons in Mississippi.

FACTORS AFFECTING DISTRIBUTION OF PHYSICIANS

The relationship between per capita income payments and population-physician ratios in various States in 1940 (table 3) indicates that

a major factor affecting distribution of physicians is purchasing power as reflected in income levels. In the four States with the lowest per capita income—below $300—there were, on the average, 1,456 persons per physician, as compared with an average of 683 persons in the six States with a per capita income of over $800.

TABLE 3.—*Per Capita Income and Population-Physician Ratios, by States, in 1940*

State	Per capita income payments [1]	Population per physician [2]	State	Per capita income payments [1]	Population per physician [2]
District of Columbia	$1,080	382	Maine	$509	951
Delaware	896	803	Missouri	505	758
New York	863	511	Iowa	485	867
Nevada	836	766	Utah	480	905
Connecticut	827	688	Arizona	473	890
California	805	630	Florida	471	925
New Jersey	803	704	Virginia	450	1,018
Massachusetts	766	608	Idaho	440	1,271
Illinois	726	683	Nebraska	433	834
Rhode Island	715	770	Kansas	422	871
Maryland	712	619	Texas	413	1,025
Michigan	649	855	South Dakota	376	1,276
Ohio	643	770	North Dakota	368	1,256
Washington	632	830	Louisiana	357	1,006
Pennsylvania	628	765	Oklahoma	356	1,043
Wyoming	605	1,105	New Mexico	356	1,245
Oregon	579	781	Tennessee	317	1,066
Montana	574	1,058	North Carolina	316	1,383
New Hampshire	546	876	Georgia	315	1,222
Indiana	541	883	Kentucky	308	1,115
Colorado	524	684	South Carolina	286	1,505
Vermont	521	778	Alabama	286	1,523
Wisconsin	516	922	Arkansas	252	1,161
Minnesota	509	819	Mississippi	202	1,635

[1] Survey of Current Business (U. S. Bureau of Foreign and Domestic Commerce, Washington), August 1944 (p. 3). Per capita income payments are derived by division of total income payments by total population excluding armed forces and civilians outside continental United States. In five States however, income was transferred from the State of the recipients' employment to the State of residence before computation of per capita income. These States are New York, New Jersey, District of Columbia, Maryland, and Virginia.

[2] Census of Population, 1940.

Population-physician ratios are also more favorable in predominantly urban States than in predominantly rural States with similar per capita income payments. Studies have revealed "a striking increase in the number of physicians practicing in urban centers and a corresponding decline in the number engaged in rural practice since the beginning of this century." [21] The physician-population ratio in the most-urban States was 1½ times that of the most-rural States in 1923 and twice as great in 1938.[21]

Availability of hospital facilities and proximity of medical schools likewise affect the geographical distribution of physicians. The 18 States in which there were no approved 4-year medical schools up to July 1945 are, with some exceptions, at a disadvantage as compared with 5 States which have 26 approved schools with 42 percent of the entire student enrollment in this country and 44 percent of the graduates between June 1944 and June 1945.[22] Wartime experience with shortages of physicians has aroused an interest in some of the States without medical schools in the establishment of such schools. Medical training facilities are also being extended by the conversion

[21] Public Health Reports, September 11, 1942 (p. 1368).

[22] Journal of American Medical Association, September 1, 1945 (p. 51).

of a few schools of basic medical sciences (giving the first 2 years of medical-school training) into full 4-year schools.

The extent to which availability of hospitals affects location of physicians is illustrated by the fact that in 1938 there were only 67 physicians per 100,000 population in counties without general or allied special hospitals as contrasted with 157 for counties in which there were 250 hospital beds or more.[23] Construction of modern hospital facilities in the numerous areas now lacking them may offer attraction for considerably more physicians, and persons planning to enter the profession should bear this in mind.

Wartime Developments Affecting Postwar Outlook

WITHDRAWALS OF PHYSICIANS FOR ARMED FORCES

The war required the placement of 12 million healthy men—that part of the population normally needing the least medical care—in the armed forces, where the need for medical care is greater than that of the general population. To serve these men—less than 10 percent of the population—40 percent of the Nation's active practicing physicians were withdrawn from civilian practice. The other 60 percent—the older physicians and those less physically fit—were left to take care of 90 percent of the population.

The Army needed 7.2 doctors per thousand servicemen and has primariiy sought those under 45 years of age. At the request of the medical profession recruitment was to proceed on a voluntary basis and the Procurement and Assignment Service was organized for this purpose, with representation of the civilian medical profession.

Although there were 176,000 physicians on the roster of the American Medical Association before the war, only about 130,000 were available for direct medical care for the Armed Forces and for civilians, after deduction for those not directly engaged in care of patients and after adjustment for those 65 years of age and over, who (according to Dr. Frank H. Lahey, Chairman of the Procurement and Assignment Service) were considered as 33 percent efficient.[24]

About 60,000 physicians were in the armed forces and the Veterans' Administration in November 1944. The withdrawal of physicians differed widely among the States, despite the attempts of the Procurement and Assignment Service to make it as equitable as possible. The prewar ratio of population to effective practitioners was 1,022 to 1. A wartime general ratio of 1,500 population per effective physician was adopted by the Procurement and Assignment Service as "the minimum below which it would be unsafe to reduce civilian medical service." [25] Recruiting quotas were established for the States in proportion to the prewar number of active practitioners weighted by the ratio of physicians of this category to the State population.

Nevertheless, some States lost more than their quotas of physicians to the armed forces, while others lost less. Among the States in the former group, by the end of September 1942, were 16 of the 21 States in which numbers of physicians had decreased during the previous two

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Public Health Reports, September 11, 1942 (p. 1951).

[24] Investigation of Manpower Resources. Hearings before Subcommittee of Senate Committee on Education and Labor (77th Cong., 2d sess.) on S. Res. 291, Part 1 (p. 201), Washington, 1943. See also chapter by Harold S. Diehl, M. D., in Doctors at War (New York, 1945).

[25] Investigation of Manpower Resources. Hearings, op. cit., Part 2 (p. 662).

decades. For example, Alabama, with 1,523 persons per physician in 1940, exceeded its quota by 94 percent; Mississippi, with a ratio of 1,635 to 1, surpassed its quota by 55 percent. Above-quota withdrawals also occurred in South Carolina, Kentucky, and other States. On the other hand, California, Connecticut, Illinois, Massachusetts, New York, and the District of Columbia, which had the most favorable population-physician ratios in 1940, had not met their quotas in September 1942.

To check this trend, active recruiting was limited to 21 States in 1943, and to 31 cities in 1944.

As a result of this accentuation of the prewar trends toward geographical maldistribution of the physicians relative to population, by October 31, 1942, the population-physician ratio exceeded the 1,500-to-1 minimum in 29 States, including almost all the States in which numbers of physicians had decreased between 1920 and 1940. The long-term downward trend has resulted in a high proportion of older physicians in those States, and since over half of the practicing physicians under 45 years of age had entered the armed forces at the end of 1942, the remaining older physicians were forced to take on a heavier load of patients. As a result, the disproportion between deaths and new entrants is causing an increasing attrition of civilian physicians in these States. This indicates that, comparatively, the highest need and demand for medical services may be found in those States after the war. In Alabama, for instance, in 1944 over 27 percent of the population resided in counties with more than 3,000 persons per physician, as compared with 12.2 percent in 1940; in Arizona the corresponding figures were 27.1 percent and none; and in South Carolina 30.4 percent and 4.5 percent.[26] At the end of 1943 there were 553 counties with more than 3,000 persons for every active physician in private practice, 141 counties with more than 5,000, and 20 counties with more than 10,000.[27]

A survey of the postwar intentions of physicians in the armed forces showed that disinclination to settle in small communities continues.[28]

WARTIME DEVELOPMENTS IN TRAINING OF PHYSICIANS

Early in the war it became evident that additional physicians were needed, but the medical schools were already taking all the students they could train. "The number of qualified applicants for medical schools is about double the number admitted year by year," stated Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service in November 1942.

To meet the situation, a program of accelerated training was undertaken. The program, adopted by all medical schools except the Woman's Medical College, made possible the completion of the usual 4-year training in 3 years, by eliminating summer vacations. Between July 1, 1942, when accelerated training was initiated in most schools, and July 1945, four classes were graduated. The number of graduates during those 3 years was 20,662 as compared with 15,535 graduates

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[26] Wartime Health and Education. Hearings, op. cit., Part 6 (p. 2176).
[27] Interim Report from Subcommittee on Wartime Health and Education to Senate Committee on Education and Labor, on S. Res. 74, January 1945 (p. 14).
[28] Journal of American Medical Association, June 16, 1945 (p. 528).

from approved medical schools during the 3 preceding years—a 5,127 increase above normal.

In April 1944, the Selective Service abolished occupational deferments of premedical students and of medical students not enrolled in medical schools by July 1, 1944. With no new assignments to the premedical Army Specialized Training Program, the Council on Medical Education and Hospitals estimated that the medical schools will have to select 75 percent of their 1946 freshmen from among civilians, and stated:

> This is manifestly impossible, and it is probable that entering classes in 1946 will be approximately half filled unless the Enlisted Reserve Corps are reinstituted or Selective Service regulations changed. . . Should no adjustment be made to correct the present situation a considerable reduction of graduates after the war will ensue. Although schools will continue the accelerated program, they will probably admit classes only once annually instead of every 9 months. This of itself will reduce the number of graduates from the present annual average of 7,000 to 5,000. If classes can be only half filled, this number will be reduced to 2,500 graduates per year. Since 3,300 to 3,500 physicians die each year, there will result an annual and cumulative deficit of 1,000 doctors a year. . . An unknown number of war casualties among medical officers will also reduce the supply of physicians.[29]

A resolution, adopted by the American Medical Association at its annual session in June 1944, emphasized the imminent danger to national health and requested immediate action by the President or Congress. At the same session, another resolution on lifting of sex discrimination from young women desiring to study medicine was rejected, on the recommendation of the reference committee which stated that "there is no large reservoir of qualified premedical women from which schools could select substantially increased numbers of women medical students." [30] As shown by table 1, the number of women students has not shown any significant increase during the war.

Postwar Demand and Supply of Physicians

The demand for physicians after the war will undoubtedly exceed that before the war, owing to the needs for medical care of veterans, to the possible maintenance of a larger military service than in 1940, to population increase, and to the likelihood that medical care of civilians will be well above prewar levels. As the war has also affected the supply of graduates, the postwar outlook depends in the final analysis on the wartime and immediate postwar supply of new entrants to the profession relative to replacement needs and to the additional demand.

POSTWAR DEMAND

In evaluating the outlook for the profession, it is necessary to study the factors affecting demand for the services of physicians. In this connection a distinction must be made between the real needs of people for medical care, and the "effective demand" for such care. It was not found possible in this study to estimate the number of physicians required to meet the real needs of the population, since there are no authoritatively determined general standards for the medical care of a population, and since concepts of medical care, as

[29] Journal of American Medical Association, August 19, 1944 (p. 1111).
[30] Idem, July 1, 1944 (p. 656).

well as techniques, are changing constantly. Besides, a realistic evaluation of outlook for use in vocational guidance must concern itself with the question of effective demand.

Effective demand for the services of private practitioners is influenced primarily by income levels and the rising standards of medical care desired by the population. On the other hand, effective demand for the services of the one out of five physicians who were salaried employees in 1940—working for such institutions as hospitals, sanitoria, insurance companies, industrial plants, research foundations, medical schools, business firms, medical cooperatives, public health clinics, or government agencies—is determined more directly by the policies and funds of the institutions employing them, and only to a small extent by general income levels.

Medical Care of Veterans

Complete care, including hospitalization and out-patient treatment by the Veterans' Administration, is assured by the Servicemen's Readjustment Act for the treatment of conditions incurred or aggravated as the result of military service. The Veterans' Administration is also authorized to furnish hospitalization, but not out-patient treatments, for disabilities which are not service connected, provided beds are available in its facilities, and provided the patient is unable to pay for hospitalization.

The Servicemen's Readjustment Act of 1944, Public Law 346, authorized appropriations for expansion of the present hospital facilities of the Veterans Administration, which will require additional physicians. The peak demand for hospitalization is expected to occur in 1975 and ultimately 275,000 to 302,000 hospital and domiciliary beds will be provided, as compared to 80,570 in operation on November 30, 1941. The greatest expansion among hospital beds will be for care of neuropsychiatric patients.[31] The Veterans' Administration also employs physicians for various types of administrative work such as rating the extent of disabilities of veterans for purposes of compensation, and adjudicating claims. A conservative estimate of the increase between 1940 and 1950 in physicians needed by the Veterans' Administration for all purposes is nearly 4,000.[32]

Hospital and Health-Center Facilities for Civilians

To a great extent effective demand for the services of physicians depends on income levels, as suggested by the data in table 3. Although it is difficult to calculate the amount of the increase in demand for physicians' services which would occur if substantially full employment were achieved, the increase would doubtless be great. Total income levels under conditions of full employment would be more

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[31] Health Needs of Veterans. Interim Report from Subcommittee on Wartime Health and Education to Senate Committee on Education and Labor (79th Cong.), Washington, February 1945 (p. 8). Wartime Health and Education. Hearings, op. cit., part 5 (p. 1755).

[32] An estimate of 15,000 is suggested by Victor Johnson, secretary of AMA Council on Medical Education and Hospitals, and Fred C. Zapffe, secretary of Association of American Medical Colleges, in a report, The National Stake in the Imperative Resumption of Training for the Scientific Profession, issued jointly by the National Research Council (OSP Bulletin No. 22) and the American Council on Education (Higher Education and National Defense Bulletin No. 84), May 28, 1945. This estimate appears to relate to the number of physicians needed at the time when about 300,000 hospital beds will be in use—i. e., some years after 1905.

than two-thirds higher than in 1940, according to the U. S. Department of Commerce.[33]

In this study no attempt was made to estimate the increase in the numbers of physicians required to meet the demands of the population for medical services if full employment were achieved. Instead, allowance is merely made for the increase in population from 1940 to 1950, on the assumption that the ratio of the general population to the number of doctors serving it at the end of the decade would be no different than at the beginning. To the extent that greater income may mean increased demand for physicians' services, the estimates presented herewith understate the prospective effective demand.

On the other hand, some allowance ought to be made for the trend toward an extension of public health services. The manpower problems of the Army and Navy have been much more serious than they would have been had the Nation's health been better, according to Interim Report No. 3 of the Senate Subcommittee on Wartime Health and Education. About 40 percent of the men of military age were found to be ineligible for military service because of physical and mental disabilities.

The health deficiencies of the population, thus strikingly illustrated, have stimulated considerable public interest in the provision of adequate medical service, according to need, through such means as privately sponsored programs of financing medical care (including prepayment plans), and publicly sponsored health programs, involving such suggestions as insurance under social security, the further development of preventive medicine, and the construction of additional hospitals, health centers, and maternity clinics.

A comprehensive program for extension of medical care is embodied in the President's message to Congress of November 19, 1945.[34] His recommendations include Federal aid for construction of additional hospitals and health centers within the reach of every community; expansion of public health, maternal and child health services; "facilities that are particularly useful for prevention of disease, mental as well as physical"; Federal support of a broad program to strengthen medical education and research; and finally a system for general prepayment of medical costs to assure all Americans ready access to necessary medical, hospital, and related services. Should this program materialize, there will be large increases in the demand for physicians in hospitals for civilians, in teaching, and in medical research.

The importance attached to grants to the States for construction of additional hospitals is reflected in pending bills.[35] The manning of additional hospitals to be constructed after the war is estimated to require 8,300 physicians.[36] Postwar planning by various private organizations for extension of medical care through prepayment schemes also points to an increased demand for physicians after the war.

[33] Full Employment Act of 1945. Hearings before Subcommittee of Senate Committee on Banking and Currency (79th Cong., 1st sess.) on S. 380, Part 8 (p. 689).
[34] Congressional Record, November 19, 1945.
[35] See, for instance, Senate Bills S. 191 and S. 1050.
[36] Hospital Construction Act. Hearings Before Senate Committee on Education and Labor (79th Cong., 1st sess.) on S. 191, Washington, 1945 (p. 83).

Postwar Needs of Armed Forces

If the armed forces should be maintained at higher levels than before 1940, there would be an increased need for physicians because of the lower ratio of population to physicians maintained in the armed forces. There are no official estimates of the size of the postwar armed forces to be maintained, but the number of physicians needed may be suggested by the fact that between 12,000 and 16,000 physicians would be required to serve 2.5 million men, depending on whether peacetime or wartime ratios are to be assumed. This implies that about 10,000 to 14,000 more physicians would be needed after than before the war for the armed forces, if a military establishment of that magnitude may be assumed.

Summary of Additional Postwar Demand

The additional postwar demand for physicians arising from medical care of veterans, expanded armed forces, planned construction of new hospital facilities for civilians, and population increase may be roughly estimated as follows for about 1950:

	Number of physicians
Total increase, 1940 to 1950, in physicians needed	32, 500–36, 500
Veterans' Administration	4, 000
Expanded peacetime armed forces (assuming 2,500,000)	10, 000–14, 000
Medical care for civilians at prewar levels, allowing for growth in population	[1] 10, 200
Extension of medical care above prewar levels, staffing proposed new hospitals and health centers for civilians	8, 300

[1] Based on the assumption of a 12.8 million population increase by 1950 (minus an estimated increase of 2 million in the armed forces and of 2 million veterans receiving medical care under the program of the Veterans' Administration) and of an average of 863 persons per physician according to the 1940 census, with the physicians 65 years and older adjusted downward by two-thirds.

SUPPLY IN RELATION TO ADDITIONAL DEMAND

In estimating the changes in the medical labor force by 1950 as compared to that of 1940, it is necessary to take into consideration the replacement needs caused during the decade by deaths of physicians as well as such changes in their age distribution as may be indicative of changes in the numbers in retirement or of lowered service capacity. Offsetting deaths and retirement is the influx of younger physicians being graduated from medical school and entering the profession. An estimate of replacement needs is complicated by the fact that losses of military physicians from death and disability may considerably exceed those of civilian physicians in the respective age groups, but the actual numbers of military casualties are unknown. Also, in estimating the supply of graduates during the decade, another unknown factor is the effect of the draft of premedical students on enrollments of freshmen in medical schools in 1945–46 and on graduations at the end of the decade. The following rough estimates of supply relative to replacement needs and to additional postwar demand are therefore subject to considerable limitations.

Replacement Needs

It is assumed in estimating replacement needs caused by death that mortality and life expectancy for physicians at various ages are not far different from those for all white males and females.[37] The com-

[37] Public Health Reports, March 3, 1944.

puted mortality of physicians between 1940 and 1950 in each age group and the numbers of physicians who may be expected to survive by 1950 in the respective age groups are shown in table 4.[38]

TABLE 4.—*Estimated Mortality of Physicians, 1940–50, and Survivors in 1950*

Physicians reported in 1940 [1]		Mortality between 1940 and 1950	Physicians expected to survive in 1950	
Age group	Number		Age group	Number
All age groups	165,341	29,783	All age groups	135,558
20–24 years	1,869	47	30–34 years	1,822
25–34 years	45,017	1,651	35–44 years	43,366
35–44 years	39,935	2,921	45–54 years	37,014
45–54 years	31,766	5,014	55–64 years	26,752
55–64 years	27,788	8,658	65–74 years	19,130
65–74 years	15,677	8,773	75–84 years	6,904
75–84 years	3,289	2,719	85–94 years	570

[1] Not including 260 on public emergency work in 1940 for whom no age data were tabulated by the Census.

Replacement needs caused by deaths between 1940 and 1950 may well exceed the estimate of about 29,800 arrived at in the above table, for it may be assumed that wartime mortality of the overworked older civilian physicians as well as that of younger military physicians would exceed the peacetime mortality rates derived from Census life tables.

It will be necessary also to replace those physicians who retire or whose service capacity is diminished because of age. In setting quotas for recruitment of physicians, the Procurement and Assignment Service assumed that because of retirement of some, partial retirement of others, and lowered service capacity of other older physicians, on the average, three physicians of 65 years and over were required to serve as many patients as one practitioner in younger age groups. This, of course, does not imply that the greater experience of older physicians does not enhance the quality of their services; it attempts to allow only for the amount of their services—the number of patients seen. If the above computation of surviving physicians were modified to count each physician 65 years or older as performing the equivalent of one-third service (and if we include the 10,000 physicians reported by the American Medical Directory as retired in 1940 but counted in the total to which the Procurement and Assignment Service applied the adjustment factor), a loss during 1940–50 of the equivalent of about 38,000 full-service physicians would be indicated, as the combined result of deaths and the aging of the profession. Should retirement be accelerated as a result of long-run social trends or the increased wartime strains on older physicians, the losses to the profession would exceed this number.

Graduations of Students

During the war an increase in graduations was made possible by accelerated training and by deferments of premedical and medical students from induction into the armed forces, but the change in the deferment policy affecting premedical students, mentioned above, may have the ultimate effect of reducing the output of graduates in 1948 and 1949. Graduates from approved medical schools num-

[38] Mortality rates were computed from U. S. Census Bureau, United States Life Tables 1939 to 1941, Vital Statistics—Special Reports, Volume 19, No. 4 (p. 31). These rates for white males and females have been applied to determine the mortality of male and female physicians.

bered 15,535 during the 3 academic years 1939–40 to 1941–42. From July 1942, when the acceleration program started, to June 1945, a total of 20,662 persons was graduated. Thus there was an increase of 5,127 in the number of graduates as compared with the previous 3-year period. Referring to this increase in supply of graduates owing to acceleration of training, however, Dr. Victor Johnson, secretary of the Council on Medical Education and Hospitals of the American Medical Association, pointed out that "recent policies of the national authorities pertaining to premedical students will more than offset this net gain in the next few years," [39] and continued: "From now until at least 1947, medical-school freshmen must be women, or men who were physically disqualified, under or over the draft age, or veterans. Because people in these categories are limited in numbers, those admitted to our medical schools in the next year or two will be appreciably reduced in numbers or in quality." It was pointed out that in 1922 the number of graduates fell to 2,529 as a consequence of reduced wartime freshman enrollments.

During the 6 academic years ending in June 1945, the number of graduates from approved medical schools totaled 36,197. There were in addition 18,202 freshmen, sophomores, and juniors enrolled in the academic year 1944-45. If the numbers of enrollments and graduates are maintained at wartime levels and if acceleration should be continued in the 3-year cycle from July 1945 to June 1948—that is, even if conditions are most favorable—the total number of graduates in the decade would be about 60,000. On the other hand, if the decline in numbers of graduates anticipated by Dr. Johnson should become apparent in the graduating class of June 1949, the number of graduates during the 10 academic years ending in June 1949 (i. e., the academic years 1939–40 to 1948–49) may not surpass 55,000.

Some hundreds of graduating physicians would under normal circumstances have died during the decade but no estimate can be made of this number since their exact age composition is not available and since it is impossible to estimate the casualties among those in the armed forces. Offsetting these losses will be a small number of licensed graduates of unapproved medical schools.

Summary of Additional Postwar Supply in Relation to Demand

In summary, on the basis of conservative assumptions as to the numbers needed to replace physicians dying or in complete or partial retirement, it is estimated that the following changes would occur during the decade in the numbers of physicians available for service:

	Number
Estimated losses:	
Loss of full-service-equivalent physicians arising from deaths and ageing of the profession (based on peacetime mortality rates)	38,000
Additional deaths of civilian physicians from wartime strains	Unknown number
Deaths and disability of physicians in armed forces above normal expectations	Unknown number
Total losses (minimum)	38,000
Estimated gains: Increment of graduate physicians	55,000–60,000
Estimated maximum net gain in number of physicians available for service	17,000–22,000

[39] Journal of American Medical Association, September 1, 1945 (pp. 39, 41, 50).

The increase in the number of physicians available for service, as calculated above will fall short of additional demand—estimated at 32,500 to 36,500—by at least 10,500 under the most favorable conditions, and under the conservative estimates above, could fall short by more than 19,500, as a result of military casualties and additional deaths of civilian physicians from wartime strains. Despite all the limitations of any estimate, the postwar shortage of physicians is bound to assume considerable proportions, resulting from a combination of long-term trends in the training and age distribution of physicians, and the effects of the war on demand and supply.

The gravity of such a shortage is increased by the fact that, because of the age composition of the profession, output of graduate medical students from accredited schools in the prewar decade exceeded losses to the profession by not much more than 1,000 each year. At prewar rates of training it would take a number of years to alleviate the conditions implied by the above estimates.

The extent of shortage of physicians will vary among the different fields of specialization. Since conditions of modern warfare cause mental disability, an acute postwar shortage of psychiatrists may be anticipated. In August 1944 there were only about 3,000 members in the American Psychiatric Association, which included 90 percent of the physicians qualified in this field.[40] Psychiatrists are stated to be the "scarcest category of medical specialists, both within the Army and in civilian life." [40] Even in New York City, where there is the greatest concentration of psychiatrists in the country, facilities for the rehabilitation of men rejected or discharged by the armed forces for neuropsychiatric reasons are reported to be "far short of needs." [41]

The need for more physicians with training in obstetrics and pediatrics was emphasized by Dr. Martha M. Eliot, of the U. S. Children's Bureau, in hearings before the Senate Subcommittee on Wartime Health and Education.

> Thousands of mothers and hundreds of thousands of children go without care that we know how to give, but are not able to provide because of inadequacy of facilities, of well-trained physicians, nurses, and other professional workers, and of administrative personnel . . . There are in the United States about 1,400 certified obstetricians, or 1 to 2,000 registered births. There are about 1,700 certified pediatricians, or 1 to 19,000 children under 15 years. Obviously, these specialists, cannot handle the actual service to all these patients. Even from the standpoint of consultation, the number is not sufficient because of the distribution. Some States have as few as 1 or 2 specialists in the entire State. Only 3 percent of the pediatricians are in communities of less than 10,000 population, yet 60 percent of the children live in communities as small or smaller. Many more specialists in pediatrics and obstetrics need to be trained and the general practitioners who see the bulk of mothers and children should have opportunity for further training in obstetrics and pediatrics.

In view of an urgent need for physicians with additional training in various specialized fields and in view of a prospective postwar demand for physicians generally well in excess of the prospective supply, the postwar outlook for physicians would seem exceptionally bright.

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[40] Journal of American Medical Association, August 19, 1944 (p. 1104).
[41] New York City Committee on Mental Hygiene of the State Charities Aid Association, in New York Times, September 22, 1944.

Employment Opportunities in Foundry Occupations

Part 1.—Outlook for Foundry Employment [1]

Summary

FORECASTS of foundry employment, based upon an analysis of trends in castings production and technology, indicate a relatively favorable outlook for this important branch of metalworking in the 2-year period 1946–47. During this period, employment in foundries should average slightly higher than the July 1945 total of about 375,000 production workers. The longer-run outlook, after a number of years of high employment, is for a moderate decline, but employment will remain far above the 1939 level.

The outlook varies among the different types of foundries. Gray-iron foundries, the largest group, are expected to increase their employment considerably in 1946–47 over the peak wartime figure. In the long run, after some of the accumulated demands for castings have been filled, gray-iron employment will tend to decline. Continuing technological changes are likely also to affect relative employment requirements. The decline may not be substantial, however, and the number of jobs should exceed the 1939 employment by a considerable margin. Employment in malleable-iron foundries is similarly expected to rise sharply above the July 1945 total for a number of years and then decline moderately thereafter.

Steel-foundry employment in 1946 and 1947, on the other hand, is likely to be slightly below the July 1945 figure and substantially below the wartime peak. The long-run trend should be relatively stable if business conditions are favorable. Nonferrous-metal foundries will also show a decline from wartime levels, but the long-run outlook is for a moderate increase thereafter.

These are the chief conclusions of the first part of a study of employment opportunities in foundries made by the Bureau of Labor Statistics to provide information for the vocational counseling of veterans and other persons making the choice of an occupation. The second part of the study, which will be published together with the first in a bulletin, covers the outlook, earnings, and conditions of work for specific occupations.

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[1] Prepared in the Bureau's Occupational Outlook Division by Calman R. Winegarden and Richard H. Lewis, with the assistance of Claire L. Labbie.

Foundry Products and Processes

Foundries comprise that branch of metalworking which produces castings, i. e., metal objects shaped by pouring molten metal into molds and allowing the metal to solidify. This constitutes a basic and distinct process among the major metal-shaping methods, which also include machining, forging, stamping, rolling, and drawing.

The casting process is highly versatile: it serves as an economical means of forming a wide range of intricate shapes, possessing considerable strength and rigidity, and varying in size from several ounces to many tons. Castings are therefore very extensively used as components of a great variety of metal products. Although some finished articles are cast, the bulk of castings output flows into the metal-fabricating industries to serve as integral parts of their final products. Among the many applications of casting, these are illustrative: Automotive cylinder blocks, farm-machinery gears, railway-car wheels, locomotive frames, ship propellers, bearings, valve bodies, machine-tool beds, ingot molds, water mains, bathtubs, radiators, washing-machine agitators, and kitchen utensils.

METALS USED IN CASTING

Casting is applicable to a number of basic metals and their alloys, classified into four broad groups—cast iron, steel, malleable iron, and the nonferrous alloys. "Cast iron" is a technical term embracing gray, white, mottled, and chilled iron, among which gray iron is quantitatively the most important. Cast steel includes carbon and alloy steels, further classified according to relative carbon and alloy content. Malleable iron is an originally brittle "white iron" converted by a heat-treating cycle into the malleable product. The nonferrous alloys are subdivided according to their dominant elements—copper, aluminum, magnesium, lead, zinc, tin, and nickel. Aluminum, magnesium, and the principal copper-base alloys, brass and bronze, provide by far the largest tonnage of nonferrous-metal castings. The selection of a particular metal for casting a given object depends upon both the physical properties required in its end use and the relative cost of the various metals.

THE CASTING PROCESS

A brief and general description of sand casting will serve as a starting point for a subsequent analysis of technological trends.

The primary characteristic of casting is the reproduction of the model or "pattern" of a desired object. The pattern forms the mold cavity and thus determines the shape of the casting. It is often made in two or more parts to permit withdrawal from the mold, and must be larger than the intended casting, in order to allow for shrinkage of the metal in solidifying and for removal of metal in machining. Wood patterns are built up by gluing and fastening wood segments shaped by hand tools and mechanical woodworking equipment. Metal patterns are usually cast from an original wood pattern, but may be machined from cold metal stock. Plaster patterns are formed by carving or scraping plaster while soft.

In sand casting, the oldest and most common of the various foundry methods, the first step is the preparation of the molding sand, in order to insure the necessary qualities of cohesion, heat resistance, and porosity in the molds. A binding material is added to the sand, and the sand is mixed by hand or by mulling or mixing machines.

A mold is usually made in two parts, the lower half being known as the "drag" and the upper half as the "cope"; the corresponding sections of the molding box, or "flask," are similarly designated. The drag flask is placed upside down on a flat molding board and the lower section of the pattern is set on this board. The flask is filled with molding sand, and the sand is tightly compacted around the pattern. Following this operation, the drag is rolled over. With the top surface of the drag of the mold as its base, the cope section is prepared in like manner. Passages through which molten metal will be supplied are formed in the cope. The two parts of the mold are then separated and the pattern is withdrawn, leaving a hollow space ("mold cavity") in the sand, conforming to the shape of the pattern. If cavities are required in the casting, they are made by inserting bodies of sand, or "cores," into the mold so that the metal will flow around the cores, forming hollow spaces in the casting. Channels, or "gates," are cut in the sand to permit proper distribution of the molten metal within the mold cavity. The sections are again joined, forming the completed mold.

Molten metal is poured into the feeding passage, or "sprue," of the mold, filling the mold cavity, and the metal is allowed to cool and solidify. After solidification, the mold is broken and the casting extracted, adhering sections of the mold are removed, and the cores are knocked out; this is the "shake-out" operation.

Molten metal for pouring is provided by various types of melting units, such as the cupola, open-hearth, electric, air, crucible, or reverberatory furnaces, each adapted to particular metals and their alloys.

Coremaking, essentially molding in reverse, produces the bodies of sand which form the interior shape of castings. In coremaking, sand is forced into a corebox, which is simply a hollow pattern made of wood or metal, usually in two or more sections. The tightly compacted sand is withdrawn from the corebox, placed on a metal core plate, and transferred to an oven for baking. Complex cores may be made in sections, and assembled by pasting. In some types of molding, the entire mold may consist of a core assembly.

In the cleaning, chipping, and finishing of the castings, metal projections formed in molding are first removed by means of hammers, saws, or shears. Then the rough surfaces of the castings are smoothed by tumbling the castings in a revolving drum or by applying blasts of air mixed with abrasive particles. Any remaining protuberances are removed by chipping with an air-driven chisel, or are burned off by an oxyacetylene flame. Manually or mechanically operated grinding wheels provide the final finishing.

Heat treatment of various types may be applied to the castings, depending upon the type of metal used and the physical properties required. Inspection of the finished castings is the final operation, consisting primarily of checking dimensions and of visual examination for surface imperfections.

TYPES OF FOUNDRIES

The tendency toward specialization of facilities and methods for the casting of one or two particular metals gives rise to several fairly distinct classes of foundries: gray-iron, steel, malleable-iron, aluminum, magnesium, and brass and bronze. The kinds of metals used in a single establishment depend largely on the type of melting equipment and the training and experience of the workers in the plant. However, foundries often operate separate departments in order to cast two or more types of metal; thus, many ferrous foundries have nonferrous departments.

In any consideration of foundries the distinction between "jobbing" and "production" methods of casting is fundamental. In production-type operations, large numbers of castings are made from each design and machine methods are employed to a substantial extent. In jobbing operations, very limited numbers of castings, frequently only one or two, are made from each design, and hand methods predominate. Intermediate between the two is the "semiproduction" type of operations.

Production foundries typically serve mass-production industries which use large quantities of identical castings as components of standardized final products, such as automobiles, plumbing and heating equipment, and household appliances. Jobbing foundries provide castings for incorporation into limited-quantity products, such as machine tools and special-purpose machinery of various types. In practice, the distinction between jobbing and production foundries is partially blurred by the fact that production foundries often do some jobbing work, especially in slack seasons.

Economic Characteristics of Foundry Operations

INDEPENDENT AND "CAPTIVE" FOUNDRIES

Foundry operations may be carried on either as separate enterprises or as part of broader manufacturing processes. The former (independent, or commercial foundries) specialize in casting, selling their output to other plants for incorporation in their products. The latter ("captive," or integrated foundries) are departments or subsidiaries of a parent company to which they transfer their output of castings for final assembly. The employment in a captive foundry is customarily included in the employment statistics of the industry in which the parent company is classified, rather than in one of the foundry industries. This makes it impossible to determine precisely the total number of workers employed in foundry operations.

In considering the employment opportunities for foundry occupations, captive as well as independent foundries must be included, because, being a significant source of foundry jobs, they affect the total opportunities and in many communities provide the only employment for foundry workers.

RELATIVE IMPORTANCE OF VARIOUS TYPES OF CASTINGS

As indicated in table 1, the production of gray-iron castings is greater than the combined total of all other types. Next in order, in total weight of castings produced, are steel, malleable-iron, and non-

ferrous-metal castings. Gray-iron foundries also have the largest employment, with an estimated 150,000 production workers in 1939,[2] including employment in captive foundries and in cast-iron pipe foundries. Steel foundries are estimated to have employed 40,000 production workers in 1939, nonferrous-metal foundries 35,000, and malleable-iron foundries 30,000 workers.

SIZE CHARACTERISTICS OF FOUNDRIES

Size of foundry is significant because it influences the organization of the production process, including the relative numbers employed in particular occupations, the types of equipment used, and the degree of mechanization.

Among the ferrous-metal foundries, gray-iron foundries are typically small production units. In 1939, of 1,161 independent gray-iron foundries reporting to the Census of Manufactures, only 4 had more than 500 wage earners (production workers). On the other hand, 818 foundries, or about 70 percent of the total number, had fewer than 51 wage earners. About 46,000 wage earners, 79 percent of the industry total, were in foundries which employed fewer than 250 wage earners each.

TABLE 1.—*Production of Castings, by Selected Types, 1929–39* [1]

Type of casting	Production (in net tons of 2,000 pounds)—					
	1939	1937	1935	1933	1931	1929
Gray iron (except cast-iron pipe and fittings)	5,847,905	6,652,257	(2)	(2)	(2)	(2)
For sale and interplant transfer	3,999,783	4,776,389	2,901,537	1,992,570	2,456,957	5,205,920
Produced and consumed in same works	1,848,122	1,875,868	(2)	(2)	(2)	(2)
Cast-iron pipe and fittings [3]	1,264,329	1,098,413	742,929	519,616	1,191,082	1,736,20
Steel	821,720	1,399,064	575,398	312,225	514,417	1,532,04
Malleable iron	508,040	660,079	433,903	263,463	299,206	735,22
Brass and bronze [4]	93,371	126,281	51,598	36,543	104,633	206,75
Aluminum [4]	32,711	23,315	(2)	(2)	(2)	(2)

[1] Data are from the biennial Census of Manufactures.
[2] No comparable data are available for these years.
[3] These are gray-iron products, but have been given as a separate classification in the Census of Manufactures, from which the data were taken.
[4] Includes only rough castings produced for sale and interplant transfer; excludes die-castings.

Both steel foundries and malleable-iron foundries are generally somewhat larger than the typical gray-iron foundry. Of 164 steel foundries reporting in 1939, 2 had more than 1,000 wage earners and 11 between 500 and 1,000; 17,200 wage earners, or more than half of the total (excluding captive foundries), were employed in plants with more than 250 wage earners. In the malleable-castings industry in 1939, the 23 foundries with 250 or more wage earners employed 10,256 of the 18,041 wage earners. Only 8 independent malleable-iron foundries had fewer than 50 wage earners.

No data are available for aluminum foundries in 1939, but they are known to range widely in size. Independent foundries producing other nonferrous-metal castings are usually quite small; of 600

[2] The term "production worker" is equivalent to the term "wage earner" previously used by the Bureau of Labor Statistics. Workers in maintenance, shipping, and similar departments are included in the definition as well as those engaged in fabrication and processing.

foundries in 1939, only 2 had more than 250 wage earners, while almost 500 foundries had fewer than 21 wage earners.

GEOGRAPHICAL DISTRIBUTION OF FOUNDRY EMPLOYMENT

Because foundries produce parts for other metalworking industries, they are located in every section of the country where metalworking activity is significant. In 1939, there was at least one independent foundry in every State except Wyoming. In spite of this wide dispersion of foundries, foundry employment is concentrated in the principal industrial areas of the country. Over 75 percent of the wage-earner employment in independent ferrous-metal foundries in 1939 was in the 9 States which had more than 5,000 wage earners each (table 2).

TABLE 2.—*Number of Wage Earners Employed in Independent Ferrous-Metal Foundries by State and Industry, 1939* [1]

State	Total wage earners, ferrous-metal foundries	Number of wage earners employed in foundries producing—			
		Gray-iron castings, except cast-iron pipe	Cast-iron pipe	Malleable-iron castings	Steel castings
United States	123,045	58,428	16,488	18,041	30,088
Ohio	18,441	10,697	652	2,566	4,526
Pennsylvania	15,142	4,837	1,334	1,659	7,312
Illinois	13,754	5,128		3,225	5,401
Michigan	11,971	7,555	(2)	2,958	(2)
Indiana	8,909	4,916		1,976	2,017
Alabama	8,417	(2)	7,847		(2)
New York	6,672	3,581	341	1,399	1,351
New Jersey	6,094	2,807	2,247	730	310
Wisconsin	5,765	1,941		1,308	2,516
California	4,342	2,410	(2)	(2)	1,193
Massachusetts	3,008	2,384	(2)	(2)	266
Missouri	2,889	1,522	(2)	(2)	984
Connecticut	2,327	1,609		(2)	(2)
Tennessee	2,216	(2)	1,180		(2)
Virginia	1,373	(2)	(2)		
Texas	1,312	746	(2)	(2)	(2)
Iowa	980	711		(2)	(2)
Minnesota	980	669	(2)	(2)	(2)
Maryland	710	(2)	(2)		
Georgia	709	582	(2)		(2)
All other States	7,034	4,071	665	661	1,637

[1] Census of Manufactures, 1939. Average employment for year. These data cover only establishments classified in the ferrous-metal castings industries on the basis of their major product, and do not therefore include employment in captive foundries.

[2] Included in total, but withheld to avoid disclosure of operations of individual establishments.

Trends in Foundry Production and Employment

The rate of foundry operations has long fluctuated with general economic conditions, being particularly affected by the extreme variation in durable-goods production. In spite of these variations, foundry production over a period of many years has reflected the long-run expansion of durable-goods manufacture (automobiles, machinery, building supplies, railroad equipment, and household appliances) which provides the principal market for castings.

Prewar trends, 1929–39.—As indicated in table 1, the annual output of castings fell precipitously from the 1929 peak through the years

of depression, the most severe relative decline occurring in the production of those types of castings (steel, and brass and bronze) most dependent on activity in the producer durable-goods industries. The high degree of economic recovery in 1937 resulted in major increases in foundry production, although castings output remained well below 1929 levels. Among the cast metals, steel most nearly approached its former peak, owing in large part to the strong demand for railway specialties. Following 1937, the sharply reduced volume of business activity led to a new decline in total castings output. However, the production of cast-iron pipe and fittings moved counter to the general downward tendency, because of the requirements of expanding public construction, and the output of aluminum castings rose in accordance with the trend toward wider industrial applications of aluminum. Thus, in 1939, the last year unaffected by large-scale military demands, the foundry industry as a whole was characterized by low levels of production and employment.

Defense period, 1940 and 1941.—The economic effects of the outbreak of the war in Europe and the subsequent inception of the domestic defense program greatly stimulated the metalworking industries, creating a comparable expansion in the demand for castings. The production of commercial steel castings in 1940 exceeded that of the preceding year by 34 percent, and malleable-iron output rose 18 percent.

In 1941, growing military requirements and high activity in the durable-goods industries exerted a dramatic effect on foundry production. As indicated in table 3, production of commercial steel castings exceeded 1,300,000 tons, representing operations at over 93 percent of rated capacity; the rapidly expanding requirements of the naval and cargo vessel programs and the heavy equipment orders of the railroads accounted for much of the increase. Malleable-iron foundries benefited particularly from the high rates of automotive railroad-equipment, and agricultural-implement production, which normally provide their principal markets. The extraordinary activity of the machine-tool industry, a significant aspect of the entire period, contributed largely to a marked upswing in gray-iron foundry employment.

TABLE 3.—*Trends in Production of Castings, by Selected Types, 1939–44* [1]

Type of casting	Production (in net tons of 2,000 pounds) in—					
	1944	1943	1942	1941	1940	1939
Gray-iron (including cast-iron pipe and fittings)	[2] 9,794,541	[3]	[3]	[3]	[3]	7,112,234
Steel [4]	1,843,386	1,928,645	1,679,178	1,316,027	797,947	594,147
Miscellaneous castings	1,505,379	1,679,981	1,369,826	844,217	507,692	400,469
Railway specialties	338,007	248,664	309,352	471,810	290,255	193,678
Malleable iron	889,820	849,764	768,496	843,038	565,923	480,578
Aluminum [5]	[2] 213,700	[2] 196,897	[2] 134,066	[3]	[3]	[3]
Magnesium [6]	[2] 99,564	[2] 70,231	[2] 21,622	[3]	[3]	[3]

[1] Data are from the U. S. Bureau of the Census and the War Production Board. Except for gray-iron castings production in 1939, these data are not comparable with those shown in table 1, having been collected on a different basis.
[2] Shipments.
[3] No comparable data are available for these years.
[4] Castings produced for sale only. Data represent slightly less than 100 percent of total tonnage sold.
[5] Excludes die castings.
[6] Excludes die castings. Includes the following quantities of magnesium incendiary-bomb body castings (in net tons): 1942, 4,794; 1943, 38,680; 1944, 58,755.

Conversion period, 1942.—In response to the unprecedented requirements for steel castings in shipbuilding and ordnance production, after the American entry into the war, employment and output in steel foundries climbed throughout 1942 to record levels. However, the curtailment of automobile and agricultural-equipment manufacture during conversion to war production resulted in reduced employment in the making of malleable-iron castings. Gray iron was similarly affected in spite of the continued expansion of the machine-tool industry. The output of cast-iron pipe fell markedly, because of restrictions on nonessential construction.

Large-scale production of aluminum and magnesium castings appeared for the first time, primarily in response to the needs of the mushrooming aircraft program. Extensive construction of new facilities, additions to existing capacity, and numerous conversions of malleable-iron and gray-iron foundries to the production of aluminum and magnesium castings provided this newly required output.

War production, 1943–45.—After the metalworking industries had completed their conversion to war production, the demand for castings rapidly outpaced the available supply. Steel-castings capacity was greatly augmented in 1943 and 1944, particularly in connection with requirements for tank armor and marine castings. The growth of aluminum- and magnesium-casting capacity continued, and production in 1944 reached twice that in 1942. Employment in the casting of brass and bronze was expanded to more than three times the prewar level. The requirements of the military truck program made heavy demands on malleable-iron foundries, compensating for the loss of the peacetime automotive market. Gray-iron employment, although below that of 1941, remained above the 1939 level, owing to such factors as the increased needs of the steel industry and the military truck program.

A shortage of foundry labor developed as a result of this expansion and was intensified by heavy Selective Service withdrawals, the inducements of higher-paying war industries, and the relatively unfavorable working conditions in many foundries. Special measures for recruiting workers, lengthening of working hours, and various wage adjustments provided some relief, but a deficiency in manpower continued throughout the war.

In 1944, cut-backs in the production of ordnance led to a reduction in steel-castings output, and the falling off of machine-tool manufacture resulted in a small decline in the volume of gray-iron shipments. Nevertheless, the employment of production workers in all foundries had reached an estimated total of 425,000, compared to the 255,000 estimated for 1939, and there was a proportionately larger increase in man-hours, as a result of the lengthening of the workweek. Employment in nonferrous-metal casting showed the greatest relative advance, rising from approximately 35,000 in 1939 to 125,000 in 1944. Steel foundries expanded their employment from about 40,000 to 100,000 over the same period. The number of production workers in the other foundry divisions grew only moderately, from 30,000 to 40,000 in malleable iron, and from 150,000 to 160,000 in gray iron. These variations among the types of cast metals reflects both the special nature of military demands and the curtailment of civilian needs. In the first half of 1945, reduced military requirements led to a slight decline in foundry employment.

Outlook for Production of Castings

FACTORS AFFECTING DEMAND FOR CASTINGS

Demand for castings and the resultant volume of production that can be anticipated are determined primarily by two factors—the level of activity in the principal industries which consume castings and their relative use of castings as compared to parts made by other processes.

Few castings are sold directly to consumers as cast. Almost all are incorporated in producer durable goods, principally machinery and other equipment, and consumer durable goods such as automobiles and washing machines. The industries manufacturing these products are susceptible to sharp fluctuations in demand and consequently in their volume of production. Since foundry activity is so closely related to the requirements of these industries, it is greatly affected by the variations in their production.

Appraisal, therefore, of future castings production must necessarily be based largely upon an assumption as to the level of activity in the durable-goods field. It has here been assumed that a high level of activity—at least equal to the best prewar years—will be maintained. The indicated outlook for employment would require modification should this assumption not prove true. The demand for castings is considered as covering all foundry production, both in independent and in "captive" plants.

The continued development of alternative methods of fabricating parts may also affect the volume of future requirements for castings. Fairly stable relationships have been maintained between the use of castings and such long-established processes as machining, forging, and rolling. Recently, however, other techniques, principally welding, stamping, and die casting, have made significant gains. The extent to which parts made by these methods are substituted for castings is dependent upon engineering and cost-accounting considerations applicable in specific cases. For this reason, the precise effect on the volume of castings production of increases in the use of these competing methods cannot be forecast. What can be done is to indicate the areas of competition and to suggest possible trends.

In die casting, a machine is used which forces molten metal into a metal mold, quickly forming a cast shape. Its advantages include a high rate of production, close tolerances, and good finish on the parts produced. This process has been confined to the nonferrous-metal alloys, principally those with bases of zinc, aluminum, or magnesium. The higher melting temperature of the ferrous metals has prevented their use in die casting. Size and design are also major limiting factors; complex shapes, large sizes, thick sections, and objects with hollow areas are often not well suited to this method. In addition, the high original cost of the die, or mold, limits its use to parts produced in large volume.

As a result, die casting will compete with foundry operations only in the quantity production of small nonferrous-metal castings. The substantial expansion of die casting in connection with wartime demands for aircraft components may provide the basis for more intense rivalry in peacetime, but will affect only a small segment of the entire foundry industry. Die casting will also compete mainly with already mechanized methods, such as machine molding and the permanent-

mold process. For these reasons, foundry employment as a whole is not likely to be materially affected.

Welding competes with casting in certain products through the use of weldments. These are metal shapes formed by welding together sections of rolled, machined, or cast metals. Welding made marked progress as a wartime substitute for casting in such applications as the manufacture of agricultural implements. Weldments have been employed in place of castings for machine-tool beds, although this use is still in the developmental stage. In some cases, welding may complement casting, in that the weldment is often built up from a number of individual steel castings. Experiments have indicated that welding provides greater economy in small-quantity fabrication, whereas casting results in lower costs in the longer production runs. In general, no major changes in the relative position of the two methods may be anticipated in the short-run period.

Parts stamped from sheet metal have displaced castings in some uses, particularly when the castings are of thin sections. In general, the method is confined to large-quantity operations, owing to the expense of setting up the necessary equipment, including dies. During the war, stamping made substantial gains in aircraft manufacture, partly as a result of the short supply of castings. In peacetime, further extension of stamping is indicated.

In projecting the production of castings it has been assumed that the demand for castings in the short-run period will not be significantly reduced by introduction of these competitive techniques into manufacture of parts now usually cast. Over the longer-run period there is likely to be a trend, in some uses, toward displacement of castings, but the net effect upon the production of castings may not be great, assuming continued technical progress in casting methods and metallurgy.

PROSPECTIVE PRODUCTION TRENDS

Gray-Iron Castings

The outlook for production of gray-iron castings in 1946 and 1947 is for the attainment of annual production totals somewhat higher than the peak wartime level. This would place the average yearly output at about 10,500,000 tons, or possibly somewhat higher if business conditions are especially favorable. The longer-run outlook is more uncertain. Present indications are that, after a number of years at this high rate of production, the trend of output will decline to some extent but remain considerably above the low level of 1939.

The above expectation rests largely upon the relatively favorable prospects of a number of the more important industrial users of gray-iron castings. The demand for gray iron is less concentrated than for other types of castings, being distributed among a wide range of industries. Several industries stand out as consumers of gray-iron castings. The automobile industry was the largest peacetime user, its 1939 consumption of about 1,200,000 tons representing 20 percent of the total (excluding cast-iron pipe and fittings). Most of this tonnage was produced in highly mechanized foundries operated by automobile companies. Gray-iron castings are used primarily in the engines and chassis of automobiles and trucks, rather than in the bodies. Cylinder blocks and heads, crankshafts, and brake drums

are illustrative. A substantial portion of gray-iron output goes to the railway industry and railway-equipment manufacturers; the production of chilled-iron railway wheels alone exceeded 500,000 tons in 1939.

In the machinery field, the machine-tool industry is the most important consumer of gray-iron castings, using them most frequently as bases and beds for the machines—parts large in area and usually of great weight. Machine-tool manufacturers purchase most of these castings from independent foundries instead of operating their own foundries. During 1941, when the machine-tool industry was approaching its wartime peak—a level far beyond peacetime totals—over 30 percent of the gray-iron castings produced by independent foundries was going into machine tools.

The basic steel industry is also one of the largest consumers of gray-iron castings, using them principally for ingot molds and rolling-mill rolls. The ingot molds are very large—usually weighing about 4 or 5 tons—and their useful life is relatively short. As a result, when steel operations are at a high level more tons of ingot molds are produced than of any other single gray-iron product except cast-iron pipe.

Other large consumers are the stove, plumbing and heating equipment, tractor, and agricultural-machinery industries, and producers of many types of industrial machinery. During the war substantial tonnages of gray iron were consumed by the ordnance and shipbuilding industries.

Shipments of cast-iron pipe and fittings—a specialized gray-iron product—go principally to construction, including local water and utility systems. Many other types of gray-iron castings are also used in construction.

The industries consuming gray-iron castings face varying prospects in the postwar period. Many of the more important products using these castings have been curtailed during the war and have accumulated backlogs of demand. In other industries, the outlook is more doubtful, the general volume of sales of producers' machinery and equipment being the uncertain factor. The automobile industry, stimulated by pent-up demand, is expected to operate at unprecedented levels and its consumption of gray-iron castings should be correspondingly high. The amount of castings going into railroad equipment should be substantially higher than before the war. Steel operations will probably be at high rates, although not up to the wartime peak unless industrial production is at very high levels. Other important industries whose consumption is likely to increase are the agricultural-implement, tractor, stove, and household-appliance industries, all of which have favorable postwar prospects.

The anticipated great expansion in construction activity should also contribute heavily to the demand for gray iron, especially cast-iron pipe and fittings.

In contrast are some of the war-expanded industries whose consumption will probably show sharp decreases—ordnance, shipbuilding, aircraft. In the machinery field, the production of machine tools will undoubtedly be below the wartime record, although considerably above the depressed period of 1938 and 1939. In other types of industrial machinery, varying conditions will prevail, some of the industries having been greatly expanded during the war and

others having a large proportion of their normal output curtailed. An active demand for gray iron should result from the restoration of full production in some of these latter industries—textile machinery and printing-press machinery, for example.

Malleable-Iron Castings

Production of malleable-iron castings should increase significantly—to as much as 25 to 30 percent—above the 1944 total of 890,000 tons during 1946 and 1947 and remain at this level for several years thereafter. Later, after some of the accumulated demand has been filled, malleable-iron production may taper off somewhat but is not likely to decline much below the peak wartime levels if conditions in the industries which consume the bulk of malleable-iron castings are at all favorable. Wartime production represents a considerable increase over 1939, a depressed year, but output in 1941, a year in which almost all of malleable production was going to civilian products, was but slightly below that of 1943, 1944, and 1945. Production in 1929 also approached the wartime peak.

Most of malleable-iron castings go in peacetime to industries that have favorable postwar prospects. In 1940, according to estimates of the Malleable Founders Society, over half of these castings were consumed by the automotive industry, distributed fairly evenly between passenger cars and motor trucks and buses. The high levels of automotive production expected will have a stimulating effect upon the total demand for malleable castings. Another large segment of malleable production goes into the construction field, principally in the form of pipe fittings and equipment for electrical utility installations, such as pole-line hardware. Construction activity also is likely to be at extremely high levels.

Almost 10 percent of the 1940 production was used in railroad equipment, and purchases by railroads are expected to be substantial for a number of years, especially since they have improved their financial position so considerably.

Agricultural machinery and tractor manufacturers comprise another substantial portion of the market for malleable iron, consuming over 5 percent of the output in 1940. The high rate of production anticipated for these industries should result in a strong demand for parts, including malleable-iron castings.

Among the less-important users, such as the manufacturers of industrial machinery, hardware, furniture, and stoves, at least a moderately active demand may be expected from most; and there are no marked instances of particularly unfavorable trends.

Steel Castings

During 1946 and 1947, and also over a longer period, production of steel castings will be at levels considerably below the high wartime totals. A substantial decline in output has already occurred since the 1944 output of 2,445,000 tons of steel castings for sale and for own use. Annual production will probably range between 1,400,000 and 1,600,000 tons for a number of years, although the total might go somewhat higher if business conditions are especially favorable. Although this level is far below that of 1944, it is considerably above the 1939 output of 822,000 tons shown in table 1. Production in 1937—a good production year—amounted to 1,399,000 tons.

The greater part of the record volume of steel castings produced during the war was allocated to the manufacture of military tanks, other ordnance, and ships. Production began to decline in 1944, when heavy cut-backs were made in the tank program.

To offset the loss of demand from war products are the expected heavy requirements of steel castings for many peacetime products. Normally, almost a third of steel-castings output is used in railroad equipment, but during the war this tonnage fell off considerably. Steel-castings producers may be expected to share in a probable increase in equipment expenditures by many railroads. A large proportion of steel-castings output is used in industrial machinery, for many types of which there is likely to be a strong demand. High rates of construction activity should also have a stimulating effect upon steel-castings production, since these castings are used in many types of construction, as well as in construction and road-building equipment.

Aluminum and Magnesium Castings

Production of aluminum and magnesium castings in 1946 and 1947 will probably be only a small proportion of peak wartime output (213,700 and 99,564 tons, respectively), but will continue to be far above prewar levels. Output of both these types of castings showed a tremendous expansion during the war, with many millions of dollars of new facilities added. Aircraft engines, whose peacetime production is likely to be but a fraction of the wartime requirements, consumed the great bulk of aluminum castings and, next to the production of incendiary-bomb castings, were the most important factor in the demand for magnesium castings.

Some aluminum castings have been used in automobile engines and this consumption may increase in importance, but it is improbable that any demand for this source can in the next several years offset the decrease in production for aircraft engines. Some aluminum household utensils are cast, but their production is relatively insignificant compared to the wartime totals. After the immediate decline from the war-expanded production totals, the output of aluminum castings should resume its gradual growth, with aluminum castings being specified in many fields where use of light metals is desirable.

Brass and Bronze Castings

Production of brass and bronze castings will be at levels considerably below the wartime volume during 1946 and 1947. The trend of output will, however, remain much higher than in 1939. The volume of nonferrous-metal castings was expanded during the war to many times the prewar level. Among the principal wartime uses have been parts for ships, including propellers and valves; bearings and bushings of many kinds; industrial valves and fittings; and ordnance. The consumption in shipbuilding should decline sharply. Valves and fittings, bearings and bushings, and castings for railroad equipment are important in peacetime, and consumption should be substantial under favorable business conditions. In addition, the postwar volume of shipbuilding is likely to be above the activity in the 1930's.

Technological Trends Affecting Employment

In order to translate the anticipated volume of castings production into an estimate of future requirements for foundry workers, it is necessary to evaluate the effects of prospective changes in man-hour output. Although the output of castings per man-hour is influenced by a number of factors—including the rate of foundry operations, the type and size of castings produced, and the quality of the labor force—in the long run, technological developments constitute the most important element in determining the relationship between employment and production.

NATURE AND SIGNIFICANCE OF TECHNOLOGICAL DEVELOPMENTS

In common with other industries' processes, casting is subject to continuous technological change, embracing wider utilization of previously developed equipment and methods which increase productivity, the improvement and refinement of existing techniques and apparatus, and the introduction of new types of machines and processes. In the following discussion of these trends, some of the principal effects of each process are indicated and prospects for greater application are explored. Particular attention is given to developments in molding, in which technical progress has been especially significant.

Substantial increases in molding speed have resulted from the development and extensive use of improved pattern equipment, substituting for the single loose patterns which constitute the basic type. Greater rapidity in molding is provided by patterns mounted on plates which fit over the molding flasks. Both parts of the mounted pattern may be affixed to one metal plate, forming a "match plate," or may be in two sections, either wood or metal, one for each half of the mold. Mounted patterns dispense with the need for hand-cutting gates (channels in the sand), eliminate the time and skill required to determine the proper position of the pattern in the molding flask, and simplify the alignment of cope and drag sections. Many small patterns often are mounted on a single plate, thus multiplying molding output. Mounted patterns, because they are relatively expensive, are more suited to quantity production than to jobbing. Their use is also limited mainly to molds of small or medium size and of relatively simple shape.

Prospects are for increased use of mounted patterns, although they already are widely employed. In part, this will result from recent developments tending to lower the cost of producing match plates.

Mechanical aids to molding encompass a variety of devices which decrease both labor-time input and skill requirements. One of the most common machines is the squeezer, which compacts the sand in the flask by direct pressure. The squeezer machine, suited mainly to flasks up to the 18 x 20-inch size, saves the considerable effort and moderate skill required in hand-ramming. Similar devices are the machines which jolt or jar the sand-filled flask, serving to pack the sand around the pattern. A roll-over apparatus simply substitutes mechanical power for manual effort in the operations of turning over cope and drag sections. These machines can handle molds weighing up to 10,000 pounds.

Among the devices used to facilitate the withdrawal of the pattern from the mold are the stripping plate, which is essentially a mechanical arrangement for raising and lowering the pattern through an opening in a plate which constitutes the bottom of the flask, and vibration attachments which loosen the pattern from the tightly compacted sand mold.

The sandslinger often provides a rapid and efficient substitute for the hand-ramming of very large molds. This machine shoots wads of sand into the flask with great force, tightly packing the sand around the pattern.

Combinations of these mechanical features are quite common, particularly in highly organized production foundries. A single squeeze-and-jolt machine, with vibration or stripping-plate features, is frequently employed in light production work, and a roll-over and jarring apparatus is used in the making of heavier molds.

In general, molding machines find their most widespread use in the quantity production of light- and medium-weight castings of relatively simple shape. Except for the elementary devices, such as the squeeze and roll-over features, machine molding is often not adapted to intricate molds, and the original cost of the machines tends to restrict their use in jobbing.

Trends in the design of molding machines are toward the development of higher operating speeds, adaptability to larger and more intricate molds, and combination of a variety of mechanical aids in a single apparatus. These improvements will accelerate a long-run tendency toward wider employment of machine methods of molding. In the making of very large molds, hitherto requiring mainly hand operations, the sandslinger and other molding machines will be more extensively used.

The permanent-mold process serves primarily in the quantity production of identical castings. In this method, a metal mold, suited to repeated pourings of molten metal, substitutes for the conventional sand mold, ordinarily usable for a single pouring. Too expensive for small-scale production, the permanent-mold process often achieves a substantial saving in long production runs, not only dispensing with the complicated process of preparing a sand mold for each casting, but also greatly reducing skill requirements. Other advantages include finer dimensional tolerances and smoother finish of the cast object. However, it may be applied only to the less-intricate shapes, and permits use only of those casting metals having a lower melting point than the permanent mold itself. Thus, the nonferrous-metal alloys as a group are best adapted to the process; among the ferrous metals, only in the case of gray iron has permanent-mold casting been carried beyond the experimental stage. The use of permanent molds, greatly expanded in connection with wartime production of aluminum and magnesium castings, may be expected to show further increase, particularly when the development of metal molds with higher heat-resistant qualities is completed.

Centrifugal casting is another of the quantity-production techniques. In this process, molten metal is poured into a sand, carbon, or metal mold which is rapidly spun about either a horizontal or a vertical axis. This process provides a high rate of production, and superior strength and exterior finish in some types of castings. It has been applied to both ferrous and nonferrous metals; cast-iron pipe constitutes the most common use. However, employment of the

centrifugal process has been increasing, within certain limitations regarding size and shape, in the casting of the heavy metals. Centrifuging, a closely related casting method, widens the range of application of the centrifugal principle.

Investment, or "precision," casting represents a relatively new application of the old "lost wax" principle. In this process, the pattern is made of wax or plastic material and the pattern is surrounded by plaster or other refractory material, which forms the mold. The mold is baked in an oven until the wax or plastic pattern is dissipated, leaving a hollow mold cavity, into which metal is introduced by gravity, direct pressure, or centrifugal force. The investment process has been used particularly in the casting of small objects of alloy steel; its extension to other metals and to larger sizes is still in the developmental stage. Its major advantages over other casting methods lie in the very close tolerances and fine exterior finish of the castings produced. Although investment casting opens a new field for casting in its application to shapes hitherto machined or forged, it also reduces time and skill requirements in relation to sand casting.

Machine coremaking, like machine molding, is suited mainly to quantity operations and possesses the same primary economies of rapid production and minimum skill requirements. Cores may be machine-made by means of a core turn-over-draw apparatus, essentially a modification of the jolt and roll-over molding machine, in which the core box substitutes for the molding flask. Simple cores may be quickly produced by the die-type coremaking machine: sand is fed into a hopper, impelled by a conveyor screw, and extruded through a detachable tube, the interior shape of the tube forming the exterior shape of the core. Still another device, the coreblower, pneumatically forces sand into the hollow form which shapes the core. The use of coremaking machines is generally confined to the smaller and simpler structures; the limitations are roughly comparable to those of machine molding. Improvements in coremaking machines, increasing their versatility, speed, and automaticity, will result in continued expansion in their use. Apart from the mechanization of coremaking, core-room operations will be affected by a trend in the design of castings toward elimination of complex interior shapes wherever possible, thus reducing the need for sand cores.

Materials handling provides one of the most likely fields for increased mechanization, in that the movement and manipulation of a large volume of materials are characteristic of foundry operations. In jobbing foundries, in which mechanization is ordinarily limited, the moving of lighter materials, such as small molds and cores, is usually accomplished by means of simple lifting and carrying or by hand-operated trucks; large molds and other heavy or bulky objects are transported by overhead and side-wall cranes. Production operations make use of a variety of materials-handling devices, including electric tractors and lift trucks and, in the more highly mechanized establishments, of extensive belt and overhead conveyor systems. Stimulated by wartime labor shortages, the long-run trend toward installation of materials-handling equipment has gathered momentum.

In the cleaning, chipping, and finishing phases of the foundry process, mechanization has made substantial advances. The newer tumbling machines and blasting apparatus, which raise the efficiency of the cleaning operations, will be more extensively installed. Quicker

finishing is provided by the growing use of improved grinding apparatus.

Modern furnace equipment and the wider use of conveyor systems in charging the furnaces increase the rate of melting operations. Efficiency in melting is also raised by greater use of duplexing and triplexing, in which several types of melting units are successively used.

Technological developments tending directly to increase foundry employment include extension of the use of heat treatment and intensifying inspection and quality-control procedures.

Heat-treating procedures improve the physical qualities of castings and provide a desired range of mechanical properties. The principal processes employed include annealing, normalizing, quenching, tempering, and flame hardening. Although one or more of these methods is applicable to most of the casting metals, the most important use has been in the making of malleable-iron and steel castings. However, heat treatment of gray iron has increased markedly during recent years.

Many elaborate devices and techniques have been developed to aid in inspecting the mechanical properties and internal structure of cast metals. The more important types include radiography, magnetic methods, and pressure tests.

EFFECT OF TECHNOLOGICAL CHANGES ON FOUNDRY EMPLOYMENT

Man-hour output varies widely among foundries, reflecting the diversified nature of cast products, the distinction between jobbing and production methods, the differences between the smaller and the larger establishments, and the inevitable lag between the introduction of new methods and their widespread application. There is, nevertheless, a marked trend toward increased output per man-hour.

During the war, the high volume of castings production, the improved financial position of many foundries, and the continuing shortages of workers resulted in rapid and extensive advances in the substitution of machine methods for hand processes. Sales of foundry equipment—including molding and coremaking machines, new melting units, and cleaning and finishing apparatus—reached unprecedented levels. Much more use was made of centrifugal casting, permanent molds, and other quantity-production techniques. However, output per man-hour showed little increase in foundries as a whole; a greater weight of castings was produced with relatively fewer workers, but this was achieved mainly by lengthening working hours. The scarcity of skilled workers and the lack of efficient unskilled labor largely canceled out the immediate advantages of mechanization. Nevertheless, with the return of normal operating conditions, the large volume of labor-saving equipment installed, and the new methods applied will affect the levels of foundry employment.

In the long run, technological developments will lead to a gradual reduction in foundry employment in relation to the output of castings. These effects will be variable. Jobbing operations are by their nature susceptible to only limited mechanization; in quantity production, a more marked decrease in labor requirements is probable. In relation to the end uses of castings, this will eventually mean that the greatest relative reductions in employment will occur in foundries serving the

mass-production industries, such as those making automobiles, plumbing and heating equipment, and household appliances; the labor force in establishments making castings for limited-quantity uses, such as machine tools and special-purpose machinery, will be less affected. Thus, the general level of foundry employment will depend upon the nature, as well as the magnitude, of the demand for castings.

One additional factor may be noted. If lower production costs, resulting from technological developments, lead to an expansion in the markets for castings, then increased output per man-hour may partially offset its own tendency to reduce employment.

It is also necessary, in evaluating the effects of technical progress on foundry employment, to consider the relative importance, in terms of employment, of the various foundry operations. Molding departments are most important, accounting for roughly 30 percent of all production workers in foundries. Coremaking employs about 10 percent of the total. As noted, these departments are subject to substantial mechanization, not only of direct molding and coremaking processes, but also of many incidental handling operations. Cleaning, chipping, and finishing account for nearly a fifth of the foundry workers. Requirements for unskilled labor in these processes gradually will be reduced, particularly in connection with materials handling. Labor requirements in melting operations eventually will show a moderate decline, but foundry employment as a whole will be little affected by changes in this relatively small department. Greater use of testing apparatus and other quality controls and more extensive application of heat treatment will increase employment in the numerically small inspection and heat-treating departments.

Employment Outlook

The outlook for foundry employment depends upon the prospective trends in foundry production and technology.

In the immediate postwar years, the levels of foundry employment will be determined primarily by the volume and type of castings produced; technological change, typically a gradual process, will be a less-important factor. During this period, foundry activity as a whole will be at a very high level. However, production of gray-iron and malleable-iron castings is likely to be greater than the peak wartime output, and that of steel and nonferrous-metal castings considerably below.

In addition, there will be a shift in the nature of the markets for castings. The anticipated high volume of consumer durable-goods output and the expected increase in construction, both of which will contribute greatly to the total demand for castings, will require mainly the types of castings produced in large quantities. Castings for machine tools and other limited-quantity purposes will be relatively less important. Emphasis will thus be placed on the types of foundry operations in which output per man-hour is comparatively high, a development tending to reduce total requirements for foundry workers.

The effects of extensive mechanization of foundry operations during the war will carry over into the postwar period, but should not of themselves result in any immediate marked decrease in employment. A much more important factor is the probable return to about a 40-

hour workweek, causing a substantial increase in the relative employment requirements of foundries.

Taking into account production prospects, technological factors, and the probable reduction of working hours, it appears that total employment for foundry workers during 1946 and 1947 will be slightly above the estimated number in July 1945 (when the initial cut-backs in war production had already been felt). The total foundry employment anticipated for 1946–47 is somewhat lower than the 1944 peak, but far above the 1939 level. Increases are indicated for gray-iron and malleable-iron foundries, and decreases for steel and nonferrous foundries.

The forecasts for 1946–47 are compared with estimated employment in 1939, 1944, and July 1945 in table 4.

TABLE 4.—*Estimated Foundry Employment* [1] *in Selected Periods*

Type of foundry	Estimated number of production workers			
	1939	1944	July 1945	1946–47 (average)
All foundries	255,000	425,000	375,000	365,000–400,000
Gray-iron, including cast-iron pipe	150,000	160,000	155,000	185,000–200,000
Malleable-iron	30,000	40,000	37,000	55,000– 60,000
Steel	40,000	100,000	78,000	70,000– 75,000
Nonferrous-metal	35,000	125,000	105,000	55,000– 65,000

[1] Estimates include workers in both captive and independent foundries and are based on current product classification; therefore, they cannot be related to the published foundry-employment series of the Bureau of Labor Statistics, which cover only independent foundries and are based on 1939 product classification.

In the longer run, say the 5- or 10-year period beginning about 1950, total foundry employment will probably show a moderate decline from the immediate postwar level, but will remain well above 1939, if general business conditions are favorable. After the accumulated demands for certain durable goods have been met, the distribution of employment among the major classes of foundries will tend to return to the prewar pattern. For this reason, employment in gray-iron and malleable-iron foundries, greatly expanded in the immediate postwar period, will probably be reduced. On the other hand, employment in steel castings, having been sharply deflated in the first peacetime year, will tend to remain fairly stable; employment in nonferrous casting, after the initial postwar drop, will show a gradual moderate rise.

In the long run, technological developments will become a highly significant factor affecting employment. There will be a gradual but steady increase in castings output per man-hour which, in a period of stable or declining output, will lead to further reductions in employment. There is also the possibility that the rivalry between casting and alternative methods of fabrication may result in some net loss of foundry markets.

There is no indication, however, that this gradual decline in foundry employment from the high levels of the immediate postwar period, which may continue over a period of many years, will result in the loss of jobs for any significant number of foundry workers, although the number of openings for new workers will be diminished.

Because of such factors as the extent to which workers can readily transfer from one type of foundry to another, the replacement demands

resulting from death, retirement, and labor turn-over, and the demand and supply affecting individual occupations, information on the trend of total foundry employment does not of itself provide an adequate basis for appraisal of the opportunities for employment in foundries. The second part of this study of the employment opportunities in foundry occupations will relate the changes in employment here noted to the employment opportunities in specific occupations.

Productivity of Labor and Industry

Productivity Changes in Selected Wartime Shipbuilding Programs[1]

Summary

PROGRESSIVE reductions in unit labor requirements and in the time required for delivery at virtually all shipyards were important factors in meeting the enormous wartime demand for ships of all types. The most substantial reductions in labor requirements were recorded in yards building large numbers of ships of uniform design. Liberty ships delivered in December 1944 required, on the average, only 45 percent of the number of man-hours and little more than 20 percent of the time from keel laying to delivery needed for the first vessels, delivered in December 1941. Similarly, labor requirements for Victory ships were reduced by 50 percent and time requirements by 18 percent between February 1944, the month of the first deliveries, and December 1944. Labor requirements for destroyer-escort vessels built for the Navy dropped 45 percent from April 1943 to January 1944 and rose somewhat thereafter as the program became less urgent. Man-hour requirements for two types of tankers and for cargo vessels of seven types showed less-pronounced declines.

Analysis of unit labor requirements for individual yards revealed that, in all yards for which data were obtainable, a given percentage increase in output tended to result in a constant percentage decrease in labor requirements. Average declines of 16 to 22 percent in the number of man-hours required per ship accompanied each doubling of output in representative yards building Liberty ships, Victory ships, tankers, and standard cargo vessels. Within each program, there was considerably more variation in the rate of decline than between programs, but in all cases the percentage reduction was significant, ranging from 10 to 26 percent for individual yards each time production doubled.

Apparently, differences in the types of vessel are not nearly so important in determining the extent of reduction in man-hour requirements as differences between individual yards. Furthermore, substantial percentage reductions were made by all yards constructing large numbers of vessels of standardized design by means of mass-production techniques.

[1] Prepared in the Bureau's Productivity and Technological Development Division by Allan D. Searle, under the supervision of Celia Star Gody. For detailed information concerning the shipbuilding program as a whole (employment, production, labor turn-over, absenteeism, wages, etc.) see Bureau's Bulletin 824, Wartime Employment, Production, and Conditions of Work in Shipyards.

Wartime Growth of Shipbuilding

One of the outstanding war-production achievements was the performance of the shipyards. At the outset of the war, the shipbuilding industry was poorly prepared to undertake the tremendous volume of ship construction which would be required. In 1936 the shipbuilding industry of the United States produced only 9 merchant ships, totaling about 108,000 dead-weight tons. With the passage of the Merchant Marine Act of 1936 and the formation of the United States Maritime Commission in 1937, a stimulus was given to shipbuilding in the form of direct operating and construction subsidies. The volume of shipbuilding rose gradually until in 1939 it reached the modest total of 28 vessels of 340,000 dead-weight tons. During the war, however, the volume of shipbuilding assumed enormous proportions. The naval programs greatly expanded, and the dead-weight tonnage of merchant ships constructed increased to a peak (1943) of almost 1,900 ships totaling 19 million tons—more than 50 times the 1939 tonnage.

The shortage of shipping capacity was critical during the early period of the war, and it was imperative that a larger number of vessels be built speedily. The required volume obviously could not be obtained without a radical departure from conventional methods of ship construction. Accordingly, a few standardized types were selected to make up the bulk of the shipbuilding program. Concentration on these vessels made it possible to apply mass-production methods to ship construction. Components were prefabricated in fairly large quantities back of the ways, frequently on subcontract, and put together into large subassemblies, which were then incorporated into the vessel. Since work could thus be done simultaneously on different parts of the ship, the time needed between keel laying and completion was sharply reduced. Moreover, the amount of labor required per vessel was also cut substantially, and this factor became of increased importance as labor supplies grew stringent. The Liberty ship is, of course, the outstanding example of mass-production shipbuilding, but similar techniques were used for other programs—Victory ships, tankers, and even destroyer-escort vessels.

Scope of Study, and Nature of Basic Data

Average labor requirements and average time requirements (keel laying to delivery) are presented here for selected types of vessels included in the shipbuilding programs of the U. S. Maritime Commission and of the Navy Department. The programs represented constitute the major part of the Maritime Commission programs—Liberty ships, Victory ships, selected C1, C2, and C3 cargo vessels, and selected types of tankers. Liberty ships comprised the greater part of the Maritime Commission war program to December 1944—approximately 57 percent of all ships delivered. At the end of the period covered by the indexes, however, the Liberty-ship program was nearing completion, and Victory ships were assuming greater importance.

The indexes and averages here given do not include all vessels delivered, but coverage is generally high for the periods represented. Data on man-hours are not available for all types of vessels; the cargo vessels and tankers are represented by selected types for which sufficient data could be obtained. The index for Liberty ships includes the one principal type (which constitutes over 97 percent of total deliver-

ies) and excludes only those converted to military use. The index for Victory ships represents the three types delivered through December 1944.

The indexes and averages of labor requirements per ship are based on data furnished by the U. S. Maritime Commission and the Navy Department and on reports of shipyards to the Bureau of Labor Statistics. Data for time requirements from keel laying to delivery are based on reports of the Maritime Commission and of the Navy Department.

The indexes or averages of labor requirements for any month refer to those vessels delivered during the month, and not to the work done in that month. All ships completed and all man-hours worked are allocated to the months in which the vessels were delivered. Since most vessels require more than 1 month to complete, a change in yard efficiency may not be reflected in the average or index until some months later, when delivery is made. The importance of this lag is negligible for those types requiring only a month or two to build—Victory and Liberty ships—but is significant for types with long building periods, such as destroyer-escort vessels. The lag is of less importance, generally, for ships built after a program is well under way than for ships built at the beginning of a program, because of the usual progressive reduction in average building time.

The labor data used in constructing the labor-requirements indexes and averages are total man-hours—direct man-hours plus the hours worked by "other employees."[2] Data concerning the number of man-hours worked outside the yards on subcontracts are not generally available, and hence such man-hours are not included.

Changes in the proportion of work subcontracted may have some effect on the indexes. Since man-hour data of subcontractors are not reported, labor requirements are underestimated for yards sending work outside. Furthermore, the proportion of subcontracting done by any one yard may vary from time to time, depending on the availability of facilities and manpower within the yard to perform the required work. Subcontracting tends to increase when yards fall behind schedule and to decrease when schedules are being met. The resultant reduction or expansion in man-hours per ship is, of course, quite unrelated to real changes in yard efficiency. The yards of the West Coast are more likely to subcontract work than the older East Coast yards. Part of the index decrease, therefore, may be due to slight increases in subcontracting as new yards begin construction.

It is not likely, however, that subcontracting influences the trend significantly in any program. In one program—Victory ships—the proportion of subcontracting is constant and need not be considered.

Labor and Time Requirements for Individual Programs

LIBERTY SHIPS

The Liberty-ship program was begun in 1941 under the jurisdiction of the U. S. Maritime Commission. The Liberty vessels were designed to meet an emergency demand for cargo-carrying capacity for the United States and its allies. In order that large-scale production could commence without delay, relatively simple plans were adopted—

[2] The time worked by "other employees" includes that of supervisory, technical, clerical, office, maintenance, power-plant employees, etc. The time worked by these employees is allocated to the individual hulls in proportion to the number of direct man-hours worked on these hulls.

those of a type of vessel previously constructed for British account. The Liberty vessels are of 10,800 dead-weight tons, are propelled by triple-expansion reciprocating steam engines, and have a speed of 11 knots. Welding replaced riveting as means of hull construction. The standardization of design made possible not only mass production but prefabrication of parts and considerable subcontracting.

The first Liberty vessels, delivered in December 1941, required an average of 1,150,000 man-hours to build, and 236 days elapsed between keel laying and delivery (table 1). As experience was gained, however, outstanding progress was made in reducing both man-hour and time requirements. By December 1944, man-hour requirements had been reduced to 515,000, a decline of 55 percent. The decrease in average building time was even more marked. In December 1944, average building time was less than 50 days—approximately a fifth of the building time of the vessels delivered in December 1941. Of course, there was some variation among yards. For vessels delivered in December 1944, man-hour requirements ranged from 411,000 to 683,000 and construction time from 35 to 64 days.

TABLE 1.—*Man-Hour and Time Requirements for Liberty Vessels Delivered from December 1941 to December 1944* [1]

Month	Number of yards included	Number of vessels included	Man-hours per vessel (in thousands)	Days per vessel—keel laying to delivery	Indexes (December 1941=100)	
					Man-hours per vessel	Days per vessel—keel laying to delivery
1941: December	2	2	1,146.6	236	100.0	100.0
1942: January	2	3	1,073.6	242	93.6	102.5
February	5	12	978.8	229	85.4	97.0
March	5	16	953.0	219	83.1	92.8
April	5	26	868.9	180	75.8	76.3
May	8	43	886.1	156	77.3	66.1
June	9	51	826.7	124	72.1	52.5
July	9	51	804.2	110	70.1	46.6
August	10	56	798.9	84	69.7	35.6
September	10	67	703.1	71	61.3	30.1
October	11	65	676.2	67	59.0	28.4
November	11	68	622.5	57	54.3	24.2
December	11	82	632.7	56	55.2	23.7
1943: January	11	76	607.4	53	53.0	22.5
February	12	77	657.4	62	57.3	26.4
March	12	102	611.0	59	53.3	25.1
April	14	110	618.0	58	53.9	24.7
May	14	120	609.5	58	53.2	24.4
June	14	115	570.9	56	49.8	23.8
July	14	109	548.2	54	47.8	22.8
August	13	110	533.6	47	46.5	19.9
September	11	104	510.2	42	44.5	18.0
October	11	97	516.1	43	45.0	18.1
November	9	85	511.2	42	44.6	17.6
December	10	113	486.1	40	42.4	17.1
1944: January	11	71	502.3	43	43.8	18.4
February	12	77	499.3	50	43.5	21.2
March	12	83	555.3	55	48.4	23.4
April	12	75	538.0	54	46.9	22.8
May	11	64	541.7	55	47.2	23.2
June	9	54	530.0	52	46.2	21.9
July	9	50	579.3	61	50.5	25.7
August	8	47	592.3	66	51.7	27.8
September	8	42	567.7	58	49.5	24.7
October	8	50	546.7	57	47.7	24.2
November	7	45	542.8	53	47.3	22.4
December	7	40	515.4	49	45.0	20.6

[1] EC2-S-C1 only; modified Liberty ships excluded.

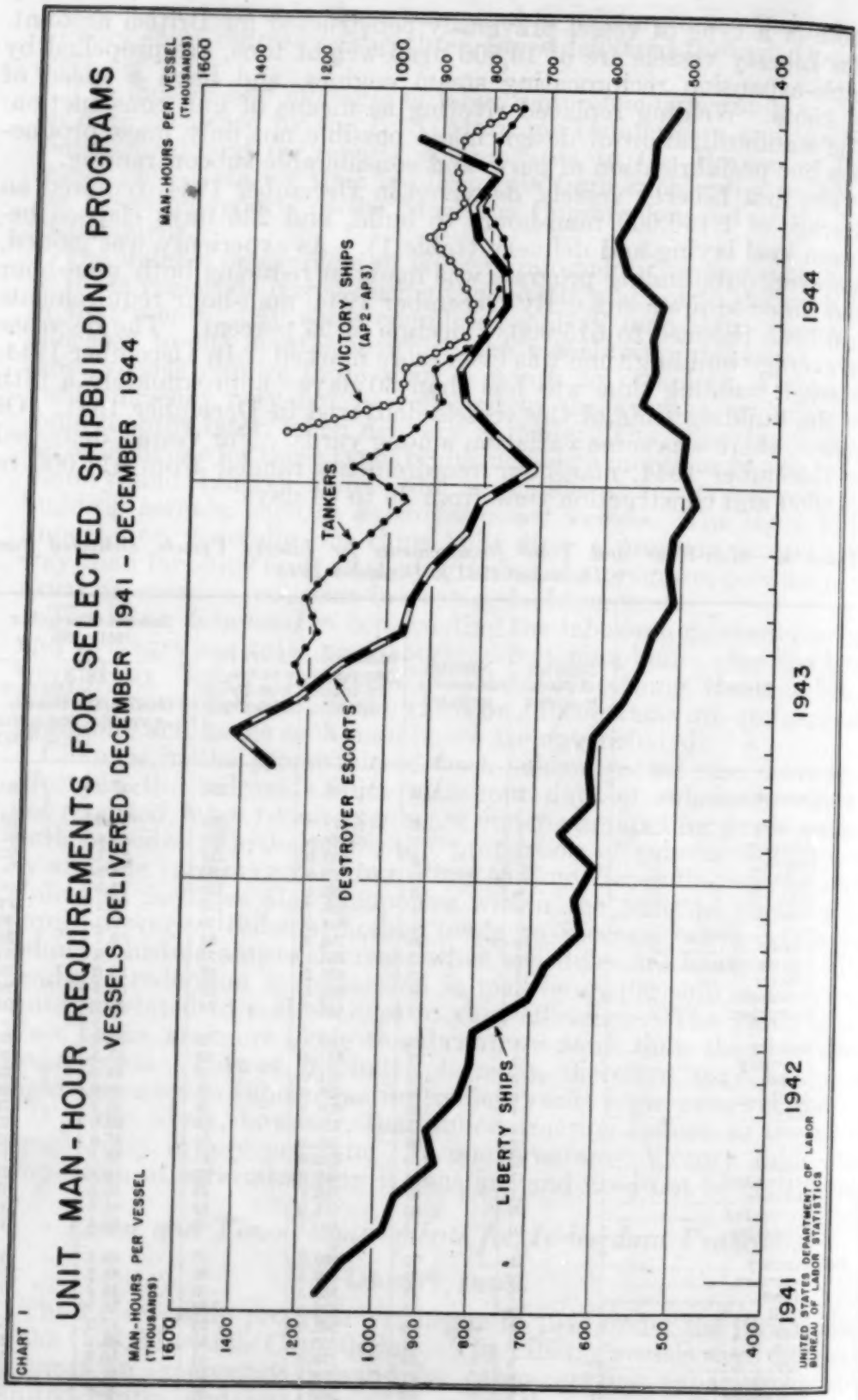


CHART 1
UNIT MAN-HOUR REQUIREMENTS FOR SELECTED SHIPBUILDING PROGRAMS
VESSELS DELIVERED DECEMBER 1941 - DECEMBER 1944
MAN-HOURS PER VESSEL (THOUSANDS)
1600
1400
1200
1000
900
800
700
600
500
400
VICTORY SHIPS (AP2-AP3)
TANKERS
DESTROYER ESCORTS
LIBERTY SHIPS
1941
1942
1943
1944
UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

The most substantial decline in both labor and time requirements occurred during the early phases of the program as yards took advantage of standardized design, improved assembly techniques, and mass-production methods to reduce labor requirements and expedite deliveries. Between December 1941 and December 1942, man-hours per vessel decreased 45 percent, and days per vessel 76 percent. Thereafter, unit labor and time requirements continued to decline until December 1943, the record month, but the declines were small in comparison with those of the preceding year—23 percent for man-hour requirements and 28 percent for time requirements. The increases after December 1943 may be attributed to the tapering off of construction as contracts were terminated and some of the yards converted to Victory-ship production. Chart 1 shows the average man-hour requirements for the Liberty-ship program as well as for tankers, Victory ships, and destroyer-escort vessels.

VICTORY SHIPS

Although Liberty ships provided a large amount of cargo capacity to meet emergency needs, they had certain disadvantages. Speeds were low—11 knots—and the vessels were less durable than other types. It was recognized that, for both reasons, Liberty ships would have little postwar value. During 1943, therefore, the Maritime Commission replaced part of the Liberty-ship program with a program for the Victory ship—a faster type and equal to the Liberty vessel in dead-weight capacity. The Victory ships were designed to provide approximately 10,800 dead-weight tons and travel at a rate of 15 knots upward. These vessels are expected to be a major factor in the postwar merchant fleet of the United States.

Victory ships are of three principal types: VC2–S–AP2, VC2–S–AP3, and VC2–S–AP5. The VC2–S–AP2 and AP3 types are primarily bulk-cargo vessels. The former type is somewhat the slower of the two, with a rate of 15½ knots compared with 17 knots for the AP3. The third type, VC2–S–AP5, represents conversions to military use as combat transports, but it is possible that some of these vessels may be converted to postwar use as merchant ships.[3]

The plans to substitute Victory for Liberty ships initially entailed the expenditure of additional labor per vessel. In February 1944, when the first Victory ship was delivered, Liberty ships required an average of approximately 500,000 man-hours. The first Victory ship, of the AP3 type, consumed more than 2½ times that amount—1,285,000 man-hours (table 2). However, this total was only 12 percent above the average for the initial Liberty ships, and it was reduced sharply in successive months. The AP3 vessels delivered in March 1944 required only 982,000 man-hours, or 24 percent less than the first vessel; by September 1944, labor requirements had been reduced to 844,000 man-hours per vessel. Unit man-hour requirements for the AP2 vessels were roughly similar to those for the AP3, declining from 927,000 in September 1944 to 765,000 in December 1944. The labor requirements for the AP5 type were considerably higher than for the other two types—1,813,000 in August 1944 and 1,104,000 in December 1944.

[3] The Adaptability for Postwar Service of U. S. Maritime Commission "C"-Type and Victory-Type Ships, a paper presented April 27, 1945, by Vice Admiral Howard L. Vickery before the New York Metropolitan Section, Society of Naval Architects and Marine Engineers.

TABLE 2.—*Man-Hour and Time Requirements for Victory Ships Delivered from February 1944 to December 1944*

Month	Man-hours per vessel (in thousands)			Number of yards included	Number of vessels included	Indexes (February 1944=100)	
	VC2-S-AP2	VC2-S-AP3	VC2-S-AP5			Man-hours per vessel	Days per vessel—keel laying to delivery
February	----------	1,285.0	----------	1	1	100.0	100.0
March	----------	981.5	----------	1	4	76.4	104.8
April	----------	976.0	----------	2	10	76.0	102.9
May	----------	845.7	----------	2	16	65.8	93.2
June	----------	835.2	----------	3	15	65.0	91.3
July	----------	864.5	----------	3	13	67.3	97.1
August	----------	927.3	1,812.9	4	13	72.2	112.6
September	927.4	843.7	1,637.5	5	22	65.7	122.4
October	869.5	----------	1,310.6	6	32	57.7	116.1
November	860.1	----------	1,055.9	6	39	51.0	93.5
December	765.0	----------	1,104.3	6	34	49.6	82.3

The rate of decline in average labor requirements was even more pronounced for Victory ships than for Liberty ships. A labor-requirement index covering all three types of vessels declined 50 percent from February 1944 to December 1944. During the comparable stage of the Liberty-ship program, December 1941 to October 1942, the labor-requirements index dropped 41 percent. Almost all the yards selected for building the Victory ships had gained experience constructing Liberty vessels and had made good records.

Time requirements for Victory ships were initially less than half as great as for the first Liberty vessels—approximately 100 days. The index of time requirements declined only 18 percent during the first 11 months of the construction program. At the end of that period, time requirements remained substantially higher than for Liberty vessels, varying from 80 to 90 days for different types.

The increases in the indexes in August 1944 are due to the withdrawal of a yard with relatively low labor and time requirements. The downward trend was resumed in September, but the index of time requirements remained relatively high through October. In several yards which made initial deliveries of the military type in August, time requirements increased slightly after the first vessels were completed, even though labor requirements declined.

The ships included in the indexes represent 95 percent of all Victory ships delivered through December 1944. Each index includes two segments linked in August 1944 to provide a continuous series.[4]

CARGO VESSELS OF SELECTED TYPES

The C2-type vessels represent, in general, the long-range cargo-vessel program of the U. S. Maritime Commission. Some of the types were built before the war for commercial uses and others were developed during the war. In addition to designing vessels for peacetime uses, the Maritime Commission is charged, under the terms of the legislation creating it, with the responsibility of designing the

[4] The first segment, for February to August 1944, consists of simple relatives of average time or labor requirements for the one type produced; the second segment, for August 1944–December 1944, was constructed as a weighted average of labor or time requirements for two classes of vessels (VC2-S-AP2 and AP3 as one class, VC2-S-AP5 as the other). Average labor and time requirements for each class were weighted by the number of ships of that class in the entire program, delivered or scheduled for delivery through 1944.

vessels so that they may serve as auxiliaries in time of war. Thus, many wartime conversions have been made. For example, C3 types have become aircraft carriers, destroyer tenders, seaplane tenders, passenger and cargo vessels, attack transports for the Navy, and troop transports for the Army. Many minor modifications have been made from time to time to meet the needs of the operators.

The C2 types are generally considered as potential postwar competitors of the Victory ships. They have speeds approximating that of the AP2-type Victory ship but have somewhat greater bale capacity. According to Vice Admiral Howard L. Vickery, "the C2 is adaptable to general cargo trades, particularly package freight, whereas the Victory ship could be considered better suited to routes where dead-weight or bulk cargoes are to be found." [5] The C1B type and the earlier C1A have undergone fewer wartime conversions owing to their smaller size, lack of flexibility of operation, and slower speeds in comparison with other types. They will, of course, be available for postwar use.

No summary measure of labor requirements per ship can be prepared for these cargo vessels because of the multiplicity of types, intermittent deliveries and unavailability of man-hour statistics for a number of the vessels.

TABLE 3.—*Index of Man-Hours Per Ton for Cargo Vessels of Selected Types [1] Delivered from April 1943 to December 1944*

Month	Number of yards included	Number of vessels included	Index (April 1944 = 100) of man-hours per ton (light displacement)	Month	Number of yards included	Number of vessels included	Index (April 1944 =100) of man-hours per ton (light displacement)
1943: April	2	3	129.0	1944: March	5	16	101.7
May	2	4	121.6	April	7	16	100.0
June	3	4	119.0	May	6	13	100.1
July	4	5	122.5	June	4	9	101.9
August	4	6	113.1	July	5	9	89.1
September	3	4	113.4	August	2	3	92.9
October	3	3	101.6	September	3	5	89.2
November	4	11	126.4	October	2	3	105.1
December	4	13	126.3	November	4	6	95.8
1944: January	5	14	93.6	December	2	3	93.4
February	5	10	106.4				

[1] C1B, C1-S-AY1, C1-S-D1, C2-S-AJ1, C2-S-B1, C2-S-E1, C3-S-A2.

A rough measure of labor requirements—an unweighted index of man-hours per ton (light displacement)[6]—is presented in table 3 for 7 types of "other cargo" vessels, and average labor requirements for 4 of the 7 types are shown in table 4. Labor requirements for the 7

[5] See footnote 3.

[6] Light displacement is a measure of the weight of the vessel itself, i. e., the displacement of the vessel complete with all items of outfit, equipment, and machinery on board but excluding all cargo, fuel, water, stores, passengers, dunnage, and the crew and their effects. Dead-weight tonnage, which is used more frequently to represent shipbuilding output, is a measure of carrying capacity. It is the difference between the light displacement and the full-load displacement of a vessel. It represents the total weight of cargo, fuel, water, stores, passengers, and crew and their effects that a ship can carry when at her maximum allowable draft. The indications are that labor requirements are more directly associated with light displacement than with dead-weight tonnage.

selected types declined more gradually than for Liberty and Victory ships. The ships are not standardized to the same degree, and only relatively small numbers of each type have been delivered. Furthermore, the index does not cover the entire construction period, 25 percent of all ships of the selected types delivered through December 1944 having been completed before April 1943, the first month shown in the index. It is Possible that the greatest declines in unit labor requirements and building time occurred during the early stages.

Nevertheless, even during the period of the index (April 1943-December 1944), the unit labor requirements for each of the seven selected types of vessels decreased significantly. The index of labor requirements per ton declined 28 percent from April 1943 to December 1944. The rise from October to November 1943 is due to the entrance into the index of a type with higher labor requirements per ton.

TABLE 4.—*Man-Hour Requirements for Four Types of Cargo Vessels Delivered from April 1943 to December 1944*

Month	Man-hours per vessel (in thousands)			
	Type A	Type B	Type C	Type D
1943: April	1,290.3		1,112.3	
May	1,236.3		1,184.4	
June	1,113.5	1,416.1		976.6
July	1,061.8	1,455.5	996.0	976.6
August	1,128.1	1,445.3		804.6
September	1,022.1		1,052.6	826.6
October	1,007.5	1,401.3		
November		1,630.9	1,114.8	
December		1,523.9		
1944: January	1,024.5	1,439.4	1,113.4	
February	1,026.1	1,308.2		747.4
March		1,328.6		709.4
April	991.2	1,285.2	1,025.6	705.8
May		1,194.8	960.6	753.4
June	1,128.2	1,171.0		
July	1,081.5	1,139.8	957.8	
August				729.5
September			972.9	710.5
October		1,091.4		
November		1,081.1	961.0	726.4
December		1,071.3		

The data on which the averages and index are based include 63 percent of the vessels of the 7 selected types and 32 percent of all types of "other cargoes" delivered during the period covered.

COMPARISON OF CARGO VESSELS UNDER THREE PROGRAMS

Table 5 shows the average number of man-hours required per ton (light displacement) for each of the three cargo programs—Liberty ships, Victory ships, and other cargo vessels. Tonnage provides only a rough basis for comparison, as the different vessels vary in design. Labor requirements per ton might also be expected to vary. Nevertheless, the figures indicate that the greatest economies have been achieved in the case of the mass-production programs—Liberty ships and Victory ships. The average labor requirements per ton are lower for Liberty ships than for "other cargoes" in every month shown. The labor requirements per ton for Victory ships exceed the labor requirements per ton for "other cargoes" for the initial months of the

Victory-ship program. Cargo ships delivered in February 1944 required 215 man-hours per ton, whereas Victory ships required 297. By December 1944, however, labor requirements for Victory ships were 165 man-hours per ton, and for "other cargoes," 189 man-hours.

TABLE 5.—*Man-Hours Per Ton for Cargo Vessels of Selected Types, Liberty Ships, and Victory Ships Delivered from April 1943 to December 1944*

Month	Man-hours per ton (light displacement)			Month	Man-hours per ton (light displacement)		
	Cargo vessels, selected types [1]	Liberty ships	Victory ships		Cargo vessels, selected types [1]	Liberty ships	Victory ships
1943: April	260.5	182.8	----------	1944: March	205.4	164.3	227.2
May	245.6	180.3	----------	April	202.0	159.2	225.9
June	240.3	168.9	----------	May	202.2	160.3	195.8
July	247.4	162.2	----------	June	205.8	156.8	193.3
August	228.4	157.9	----------	July	179.9	171.4	200.1
September	229.0	150.9	----------	August	187.7	175.3	234.6
October	205.3	152.7	----------	September	180.1	168.0	228.5
November	255.3	151.2	----------	October	212.4	161.7	191.8
December	255.1	143.8	----------	November	193.6	160.6	160.4
1944: January	189.1	148.6	----------	December	188.7	152.5	165.0
February	215.0	147.7	297.4				

[1] C1B, C1-S-AY1, C1-S-D1, C2-S-AJ1, C2-S-B1, C2-S-E1, C3-S-A2.

TANKERS OF SELECTED TYPES

The tanker program was one of the U. S. Maritime Commission's most vital programs. When the European war began, the United States had 430 oil tankers. By June 1, 1945, many had been lost in action, but U. S. shipyards had made up the losses and the tanker fleet (including Army and Navy) contained 1031 tankers—648 had been built under Maritime Commission contract. Now that the war is over, many tankers will be available for our postwar merchant fleet.

Table 6 shows man-hour and time requirements for two types of tankers, which together represent 81 percent of all tankers delivered from June 1943 to December 1944. The two types have the same general hull characteristics and approximate equality in dead-weight tonnage (16,600 and 16,800 dead-weight tons). Each is powered by single-screw steam-turbine electric engines. One type is of all-welded construction. The other utilizes riveting in the seams of side-shell plating and upper-deck plating.[7]

The index of labor requirements for the two types of tankers shows a decrease of 38 percent between June 1943 and December 1944. Fluctuations in the time-requirements index are greater than those in the labor-requirements index, but the two indexes generally move in the same direction.[8]

[7] New Developments in Tanker Design, by E. L. Stewart, in Marine Engineering and Shipping Review, December 1944 (p. 186).

[8] The indexes and averages were obtained by weighting average labor or time requirements for each type by the total number of vessels of that type delivered or scheduled for delivery through December 1944. The index period covers the early stages of the construction program, and only 15 percent of the vessels completed to December 1944 were delivered prior to the first month shown. Coverage is high—97 percent of the vessels of the selected types and 78 percent of all types delivered June 1943–December 1944.

TABLE 6.—*Man-Hour and Time Requirements for Tankers of Selected Types* [1] *Delivered from June 1943 to December 1944*

Month	Number of yards included	Number of ships included	Man-hours per vessel (in thousands)	Days per vessel, keel laying to delivery	Indexes (June 1943 =100)	
					Man-hours per vessel	Days per vessel, keel laying to delivery
1943: June	3	7	1,210.1	165	100.0	100.0
July	4	13	1,247.3	168	103.1	102.0
August	4	12	1,182.8	141	97.7	85.9
September	3	11	1,214.0	136	100.3	82.9
October	3	15	1,138.1	134	94.3	81.5
November	4	15	1,048.9	116	86.7	70.3
December	4	20	960.6	113	79.4	68.4
1944: January	4	10	1,093.8	140	90.4	84.9
February	4	15	981.7	133	81.1	81.1
March	4	18	891.1	115	73.6	69.9
April	4	15	904.2	134	74.7	81.1
May	4	21	816.3	120	67.5	72.6
June	4	19	798.1	102	65.9	61.8
July	4	19	767.0	96	63.4	58.4
August	3	16	778.7	101	64.3	61.4
September	4	18	819.8	102	67.7	61.7
October	4	18	790.4	100	65.3	60.9
November	4	23	791.3	99	65.4	60.3
December	4	23	746.7	95	61.7	57.9

[1] T2-SE-A1, T2-SE-A2.

DESTROYER-ESCORT VESSELS

The destroyer-escort program was developed to meet the need for a naval vessel which would combine maneuverability with the speed necessary to protect convoys. The vessels carry torpedo tubes, depth charges, and heavy-caliber machine guns. They are of three types—1,150, 1,275, and 1,400 tons light displacement. The plans are uniform, although modifications have been made from time to time. Yards participating in the destroyer-escort program have been able to take advantage of mass-production methods to reduce cost, time, and labor requirements. Considerable prefabrication of hull sections has been practiced.

The indexes for destroyer-escort vessels (table 7) include only vessels built in private shipyards. All vessels of 1,150 tons (light displacement) are omitted, as they were built in Navy yards. The indexes represent vessels of 1,275 and 1,400 tons and include 98 percent of all vessels of these types built in private yards during the period from April 1943 to December 1944, inclusive.[9] Vessels built at the beginning of the program are included, and consequently the full reduction in time and labor requirements is evident.

The 45-percent reduction in average labor requirements for destroyer escorts delivered during the initial stages of the program (April 1943 to January 1944) was slightly larger than the decline for Liberty ships during the first 10 months of that program. It will be noted that average labor requirements for destroyer escorts rose from January to April 1944 and then resumed a downward trend. The rise was due to a change in design involving a different method of

[9] The indexes are based on unweighted averages of labor and time requirements. Inasmuch as the unit labor requirements for the 1,275-and 1,400-ton types are approximately equal, no distinction as to type was made in constructing the indexes.

propulsion. As experience was gained in building the new design, unit labor requirements declined again. The increase in the number of days necessary to complete vessels delivered after January 1944 is attributable to the fact that destroyer escorts no longer retained a high priority. Thus there was a tendency for yards to schedule work on more urgent programs and to complete destroyer escorts during periods of diminished activity.

TABLE 7.—*Man-Hour and Time Requirements for Destroyer-Escort Vessels Delivered from April 1943 to December 1944* [1]

Month	Number of yards included	Number of vessels included	Man-hours per vessel (in thousands)	Days per vessel, keel laying to delivery	Indexes (May 1943=100)	
					Man-hours per vessel	Days per vessel, keel laying to delivery
1943: April	2	3	1,311.1	292	92.0	102.5
May	4	7	1,425.5	285	100.0	100.0
June	6	12	1,226.0	257	86.0	90.2
July	6	15	1,112.9	231	78.1	81.1
August	6	24	965.9	207	67.8	72.6
September	7	25	944.6	198	66.3	69.5
October	9	33	902.4	177	63.3	62.1
November	9	36	835.2	163	58.6	57.2
December	9	34	807.6	166	56.7	58.2
1944: January	8	23	717.2	146	50.3	51.2
February	8	24	780.0	170	54.7	59.6
March	8	15	841.9	188	59.1	66.0
April	9	20	852.7	192	59.8	67.4
May	9	22	806.8	208	56.6	73.0
June	9	16	768.9	213	53.9	74.7
July	6	14	773.7	241	54.3	84.6
August	5	9	828.6	243	58.1	85.3
September	4	9	838.6	237	58.8	83.2
October	2	6	790.4	185	55.4	64.9
November	2	4	950.5	233	66.7	81.8
December						

[1] Includes vessels built in private shipyards only.

Reduction of Labor Requirements in Individual Yards [10]

The averages and indexes of labor requirements per vessel are influenced by many different factors, and the reduction of labor requirements does not always appear as a steady, uniform process. Substantial changes in the indexes of labor requirements may occur from month to month because of the entry or withdrawal of yards having comparatively high or low unit labor requirements, since relatively few yards build any one type of vessel. As man-hour requirements tend to be higher in yards entering into production of a specific type of vessel than in those which have built a considerable number, declines in labor requirements for any program are retarded during months when many new yards make initial deliveries. As a result, the indexes may be subject to apparently erratic fluctuations, particularly for those types of vessels built by only a few yards.

The declines in labor requirements within individual yards with continued construction of standardized vessels have been remarkably steady, however. The general downward trend of average man-hour

[10] The number of man-hours required for groups of vessels delivered by individual yards producing Liberty ships, Victory ships, and destroyer-escort vessels are shown in Bureau of Labor Statistics Bulletin 824.

requirements for the various programs is due primarily to improvements in yard efficiency achieved as management and labor gained experience in constructing successive vessels of standardized types. Examination of the data for individual shipyards showed that each time a yard doubled its output, man-hour requirements per vessel tended to decline by a constant percentage. The percentage decrease varied from yard to yard, but the average declines were almost identical for the different types of vessels considered.

Adequate statistics were available for 10 yards which built Liberty ships, 4 which constructed Victory ships, 2 which built "other cargoes," and 4 which turned out tankers.[11] The experience gained by any shipyard, and hence the reduction in labor requirements, depends primarily on the number of vessels constructed, and not on the number of months the yard has been engaged in construction. Averages of labor requirements were prepared for successive groups of five vessels, and an analysis was made of the trend of man-hours per vessel as successive groups were completed.

It was found that, in each yard, the percentage decline in man-hours per vessel tended to be constant for a specified percentage change in output; for example, with each doubling of output, labor requirements would decline by the same percentage. If 1,000,000 man-hours were assumed to be required per vessel for the first group of five ships delivered, the number might be reduced by 20 percent to an average of 800,000 for the second group and by an additional 20 percent to 640,000 for the fourth group. When the data are shown on ratio scales, as in charts 2 and 3, a constant percentage decline in man-hours per vessel appears as a straight line.[12]

In the 10 yards which built Liberty vessels, the reductions in man-hours per ship with each doubling of cumulative output ranged from 12 to 24 percent. Chart 2 shows changes in man-hours per vessel for two typical yards. An average line, representing the composite experience of the 10 yards, is shown in chart 3. It shows a 19-percent decline in man-hours per vessel with each doubling of output.

Yards with high labor requirements for the initial vessels tended to decrease labor requirements more rapidly than yards with low labor requirements for the first group. The divergence among the trends for the different yards thus becomes smaller after the initial group has been completed. For the first group of ships, the highest trend value of labor requirements was 2.0 times as great as the lowest; by the tenth group (vessels 46–50), however, the relative difference had been narrowed to 1.7. The divergence again increases at high levels of production experience. The rates of decline and the levels of labor requirements did not appear to be related to the size of the yard nor to the date construction began.

[11] Six yards which built fewer than 80 Liberty vessels through December were omitted. Three of these yards experienced percentage rates of decrease in unit labor requirements greatly outside the range for the 10 yards included.

[12] An alternative approach was attempted, in which each group of vessels included, not five ships, but a number equal to the number of ways in the yard. The assumption implicit in this analysis is that experience gained in the course of construction of any vessel could not generally be applied to the next vessel scheduled for delivery, since this vessel might already be nearing completion. This experience could, however, be applied to the next round of vessels on the ways. If this assumption is correct, the divergence among the trend lines for the separate yards would be smaller when "way turn-over" was used as a measure of production experience than when number of vessels was used. There was no substantial difference between the results obtained by the two methods and the "way turn-over" analysis was therefore abandoned. In any yard, the percentage decline in labor requirements is the same for a doubling of output as for a doubling of "rounds," since each "round" includes an identical number of vessels. The relative levels for different yards are affected, however, by the use of "way turn-over" or "rounds" completed, rather than by number of vessels as a measure of production experience.

REDUCTIONS IN MAN-HOURS PER VESSEL WITH INCREASING PRODUCTION

MERCHANT SHIPYARDS

CHART 2

BASIC DATA FOR 2 YARDS BUILDING LIBERTY SHIPS

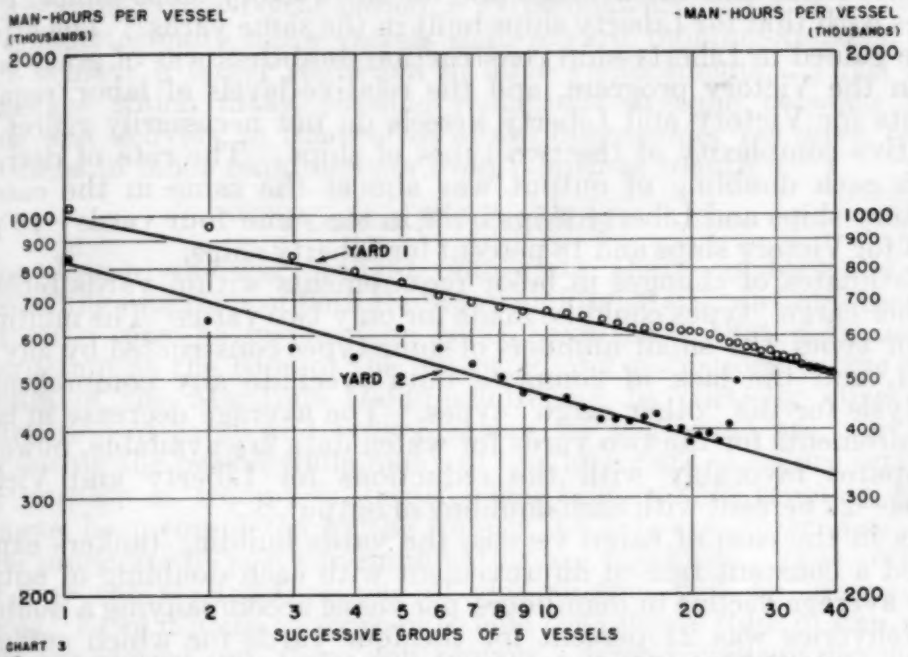
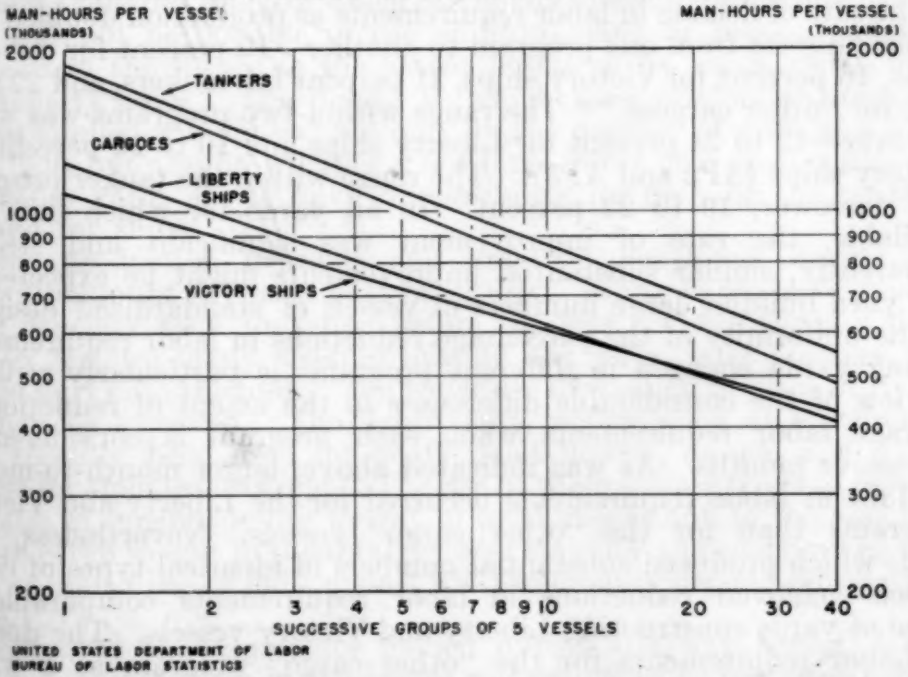


CHART 3

AVERAGES FOR SELECTED YARDS BY TYPE OF VESSEL



UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

Similar data were compiled for four yards producing AP2 and AP3 Victory ships. All these yards had had experience in the construction of Liberty ships. Chart 3 shows their composite experience with Victory ships. It will be noted that the labor requirements were below the average for the 10 Liberty-ship yards. The four yards considered, however, had better-than-average records in Liberty-ship construction, and the average line for the Victory ships almost coincides with that for Liberty ships built in the same yards. The experience gained in Liberty-ship construction doubtless was of great benefit in the Victory program, and the relative levels of labor requirements for Victory and Liberty vessels do not necessarily reflect the relative complexity of the two types of ships. The rate of decrease with each doubling of output was almost the same in the case of Victory ships and Liberty ships built in the same four yards—16 percent for Victory ships and 18 percent for Liberty ships.

Estimates of changes in labor requirements within yards building "other cargo" types could be made for only two yards. The multiplicity of types, the small numbers of some types constructed by any one yard, and the lack of complete data preclude any comprehensive analysis for the "other cargo" types. The average decrease in labor requirements for the two yards for which data are available, however, compares favorably with the reductions for Liberty and Victory ships—22 percent with each doubling of output.[13]

As in the case of cargo vessels, the yards building tankers experienced a constant rate of improvement with each doubling of output. The average decline in man-hours per vessel accompanying a doubling of deliveries was 21 percent for the four yards for which sufficient data are available.

The rate of decline in labor requirements as production doubled was rather uniform from one program to another—19 percent for Liberty ships, 16 percent for Victory ships, 21 percent for tankers, and 22 percent for "other cargoes." The range within two programs was wide, however—12 to 24 percent for Liberty ships and 10 to 26 percent for Victory ships (AP2 and AP3). The range within the tanker program was narrower, 19 to 22 percent. In all yards for which data are available, the rate of improvement was significant and steady. Apparently, similar substantial improvements might be expected in any yard building large numbers of vessels of standardized design.[14]

The uniformity of the percentage reductions in labor requirements among yards engaged in different programs is particularly striking in view of the considerable differences in the extent of reduction of average labor requirements when each program is considered in successive months. As was indicated above, larger month-to-month declines in labor requirements occurred for the Liberty and Victory programs than for the "other cargo" vessels. Nevertheless, two yards which produced substantial numbers of identical types of cargo vessels achieved reductions in labor requirements comparable to those of yards constructing Liberty and Victory vessels. The decline in Labor requirements for the "other cargo" program as a whole was smaller than those for Liberty and Victory ships because few yards produced substantial numbers of identical "other cargo" vessels.

[13] The two yards produced different types of cargo vessels. The rates of decline in man-hours per vessel were 18 and 26 percent.

[14] A similar analysis for various types of aircraft was shown in Wartime Productivity Changes in the Airframe Industry, in Monthly Labor Review, August 1945. In the case of aircraft, the average rates of decline in man-hours per pound of airframe ranged from 27 to 35 percent for the major classes.

Similarly, the decline in man-hours per vessel for the tanker program as a whole was smaller than for Liberty and Victory vessels, despite the fact that equivalent improvements were achieved by yards with comparable production experience. This difference appears to arise from the fact that the average number of days required from keel laying to delivery has been greater for tankers than for Liberty or Victory ships. In a 1-year period, a yard constructing Liberty vessels can complete many more vessels than a yard building tankers and hence achieve a larger reduction in labor requirements. Thus, any techniques which make possible reductions in time between keel laying and delivery in themselves afford opportunity for more rapid reductions in labor requirements from month to month.

Postwar Shipbuilding

The close of the war brought immediate, sharp cut-backs in the shipbuilding programs of both the Navy and the Maritime Commission. Production may be resumed on some naval craft that were under construction at the time of the cut-back, and reductions in the war program of the Maritime Commission may be partially offset by construction of cargo and tanker vessels for peacetime use, particularly during the period while many of the merchant ships are serving their purpose as troop transports. The Liberty-ship program had, of course, been completed by the time of the Japanese surrender.

The prospects of postwar shipbuilding are indefinite. It is certain only that the wartime volume of shipbuilding will be drastically reduced. Even if plans to scrap or to hold the Liberty ships in stand-by status are carried out, there will remain a large volume of merchant tonnage available, much of which can be converted to peacetime use.

It will not be possible to use uniform plans or mass-production methods in the future to the extent practiced by yards which built the Liberty ships. The degree to which mass-production methods can be applied will depend not only on the number of ships of a fixed type built but also on whether a few large yards or a greater number of smaller yards are to have responsibility for meeting the postwar demand for ships.

Some production methods and practices developed during the war will undoubtedly have postwar utility. Many yards have greater crane capacity than they had before the war. These yards will be able to perform many welding jobs off the ways, later hoisting the welded part onto the hull. The wider use of welding in place of riveting may be expected. The lightweight metals, such as aluminum, have recently been used for boats, pilot houses, davits, and outer casings for smokestacks, etc. The use of these metals tends to reduce the ratio of superstructure weight to total weight and to increase the ratio of cargo weight to the total; greater stability and economy result. The continued use of light metals will presumably depend on relative prices.

Because of the experience gained during the war period, labor and time requirements in the future will doubtless be less than before the war for comparable types of vessels, but they are not likely to approach the wartime record. The great improvements in man-hour and time requirements that have occurred should be viewed primarily as contributions to the successful development and completion of a war program.

Employment Conditions

Employment Under British Distribution of Industry Act, 1945[1]

SOON after the British Distribution of Industry Act became law on June 15, 1945, the Board of Trade announced the intention of using its powers under this legislation to continue the trading and industrial estates [2] in development areas [3] and to establish others. On existing and prospective estates the objective is to employ more than 100,000 persons. This plan forms an important step in the application of the law, which was designed to enable the Government to secure a proper distribution of industry throughout Great Britain [4] by stimulating the industrial and social development of areas in which special danger of unemployment exists and by exercising some measure of influence on industrial development in other areas in which such influence appears to be desirable for economic, social, or strategic reasons.

Provisions for Development Areas

Under the act, the Board of Trade is empowered to acquire land in development areas, either by agreement or by compulsory purchase, so that the necessary premises may be available for industrial enterprises. With the consent of the Treasury, the Board of Trade may make loans to nonprofit companies to further the provision of industrial premises in such areas. Governmental loans or grants may be made toward the cost of improving basic services such as transport, power, lighting or heating, housing, and health. Annual grants or loans are also permissible. Powers are vested in the Board of Trade to acquire derelict land and to improve it for the benefit of the neighborhood and, with Treasury consent, to make grants toward such work by a local government or nonprofit organization. No building or other work may contravene the provisions of any scheme in force under the Town and Country Planning Acts of 1932. The Distribution of Industry Act repeals the Special Areas (Development and Improvement) Acts of 1934 and 1937 and provides for closing the operations of the commissioners for the special areas but for the continuance of any agreements entered into by them.

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[1] Information is from Great Britain, Ministry of Labor Gazette (London), July 1945 (p. 112); and Board of Trade Journal (London), July 28, 1945 (p. 342).

[2] Communities integrating housing and industrial facilities.

[3] The development or distressed areas are those which had heavy and chronic unemployment between the two wars. To alleviate distress, the Government passed legislation in the 1930's, providing for assistance so that industries could be established to absorb available labor. See Monthly Labor Review, March 1939 (p. 555).

[4] The act does not apply to Northern Ireland.

The employment already furnished on the estates or contemplated under the 1945 act, in the various regions, is shown below.

	Existing employment	*Proposed employment*
Northeastern	11,000	[1] 15,000
South Wales	14,000	18,500
Scotland	20,800	[1] 19,000
West Cumberland		4,000

[1] Plus small expansion (figures not given) on one existing project.

Provisions for Distribution of Industry

The Board of Trade must be notified of all proposals for the erection of industrial buildings with floor space of more than 10,000 square feet and forming part of a new industrial unit. No contract may be let or building operations started until 60 days after notice has been given to the Board (or such shorter period as the Board may allow). The Board may also require that other information be furnished relative to the proposed business. A fine is imposed for failure to comply with the requirements regarding notice; wilful furnishing of false information is punishable by a fine or imprisonment or both. The Board of Trade has the power to issue regulations exempting any class or description of industrial building from the foregoing provisions of the law; it must place such regulations before Parliament and either house of Parliament may annul them within 40 days.

Distribution of British Manpower, 1939–45

IN MOBILIZING manpower for the war effort, Great Britain increased the total labor force from 19,750,000 in June 1939 to a peak of 22,281,000, in June 1943; by May 1945 the aggregate had declined to 21,652,000, according to a study recently published by the Ministry of Labor and National Service.[1] In the metal and chemical industries, expansion reached its peak in the second half of 1943. Then it became necessary to increase the strength of the armed forces in preparation for the invasion of Europe. Workers were taken from the metal and chemical industries (group I) as the only source of large numbers of men of military age. The movement of personnel from those industries is shown in the accompanying table covering the distribution of manpower for four selected periods between June 1939 and May 1945. Substantial reductions are also shown in the munitions industries from June 1944 to May 1945. During this same period, needed labor expansion occurred in civilian industries, particularly in group III, in spite of the decline in the working population.

[1] Ministry of Labor Gazette (London) August 1945 (p. 126).

Distribution of Manpower in Great Britain in Selected Periods, 1939–45

Industry or service	Total males and females (in thousands)				Males 14–64 years (in thousands)				Females 14–59 years [1] (in thousands)			
	June 1939	June 1943	June 1944	May 1945	June 1939	June 1943	June 1944	May 1945	June 1939	June 1943	June 1944	May 1945
Total (excluding indoor private domestic service)	19,750	22,281	22,004	21,652	14,656	15,028	14,898	14,831	5,094	7,253	7,106	6,821
Armed forces (and women's auxiliary)	477	4,754	4,963	5,086	477	4,293	4,497	4,641	.....	461	466	445
Civil defense, national fire service, and police	80	323	282	158	80	253	225	134	.....	70	57	24
Group I, metals and chemicals [2]	3,106	5,233	5,011	4,492	2,600	3,305	3,180	2,953	506	1,928	1,831	1,539
Group II	5,540	5,632	5,686	5,688	4,688	4,040	4,051	4,070	852	1,592	1,635	1,618
Agriculture, horticulture, etc	1,113	1,118	1,113	1,112	1,046	945	938	942	67	173	175	171
Mining and quarrying	873	818	813	815	868	804	799	801	5	14	14	14
National Government	539	986	1,016	1,000	416	515	520	515	123	471	496	485
Local government	846	800	793	785	520	342	324	320	326	458	469	465
Gas, water, and electricity supply	242	200	193	202	225	167	161	170	17	33	32	32
Transport, shipping, and fishing	1,273	1,191	1,250	1,260	1,222	993	1,040	1,050	51	198	210	210
Food, drink, and tobacco	654	519	508	513	391	274	269	272	263	245	239	241
Group III	9,277	6,279	6,008	6,141	5,798	3,093	2,905	2,973	3,479	3,186	3,103	3,168
Building and civil engineering	1,310	726	623	666	1,294	700	600	643	16	26	23	23
Textiles	1,002	661	627	629	401	233	222	223	601	428	405	406
Clothing	587	381	348	368	138	69	65	67	449	312	283	301
Boots and shoes	165	112	107	109	108	67	64	65	57	45	43	44
Other manufactures [3]	1,444	968	963	967	1,004	558	548	555	440	410	415	412
Distributive trades	2,887	2,009	1,927	1,975	1,888	1,016	971	980	999	993	956	995
Other services [4]	1,882	1,422	1,413	1,427	965	450	435	440	917	972	978	987
Registered insured unemployed	1,270	[5] 60	[5] 54	[6] 87	1,013	[5] 44	[5] 40	[6] 60	257	[5] 16	[5] 14	[6] 27

[1] Women in part-time paid employment are included throughout, 2 being counted as 1 unit. In May 1945 about 850,000 women were engaged in paid part-time work in industry.

[2] Included are metal manufacture, engineering, motors, aircraft and other vehicles, shipbuilding and ship repairing, metal goods manufacture, and the chemicals, explosives, oils, etc., industries.

[3] Included are the leather, woodworking, printing and paper industries, brick, tile, pottery, and glass manufacture, and miscellaneous manufactures.

[4] Included are commerce, banking, insurance, and finance; professional services; entertainment; hotel restaurant, etc., service; laundry service and dry cleaning.

[5] Figure relates to July.

[6] Estimated figure.

Discharged Soldiers

Veterans' Demobilization Benefits in France

THE FRENCH provisional Government has provided for leave with pay and cash demobilization indemnities for personnel leaving the French armed forces. Under a Ministerial decision of June 22, 1945, voluntarily enlisted men are to receive 1 month's pay with leave and a demobilization indemnity of 1,000 francs. Drafted men are to receive the demobilization indemnity of 1,000 francs and leave with pay of the duration to which they are entitled because of their service.

War-Service Gratuities in India

PERSONNEL of the Indian Navy, Army, and Air Force are to receive war-service gratuities, under a plan announced by the Government. The grant will be paid to discharged service men and women as well as to those who remain in the armed forces.[1] Gratuities are graded according to rank, and the payments for women are fixed at two-thirds of those for males of corresponding ranks. Financial benefits are in addition to any other release benefits and any measures for resettlement which the Government has approved or may later approve. It has been proposed to exempt the gratuities from Indian income tax by means of special legislation.

For able seamen and for the corresponding basic ranks in the other branches of the armed forces, the gratuity rate was fixed at 1 rupee, 12 annas per month of war service. For the highest rank, namely admiral, general, or air chief marshal, a 70-shilling monthly payment was authorized.[2] If a gratuity which is calculated in sterling is actually paid in rupees, a conversion rate of 1s. 6d. per rupee is to be applied.

An individual promoted above his substantive rank is eligible for a gratuity based on such higher rank as he holds on release or demobilization. However, if he has been in a still more favorable position for not less than 6 months during the war, he is entitled to a gratuity on the basis of such higher payment. For a man who has served in the ranks and also as an officer, the rate of gratuity is calculated separately for each period.

The date up to which war gratuity is payable for personnel not released or demobilized was left for later decision.

[1] Data are from Indian Information (Washington), July 15, 1945 (p. 114).

[2] The value of the Indian rupee in September 1945=30.12 cents and the British pound sterling $4.025 (approximately 20 cents to the shilling and 1.67 cents to the penny). Studies in the interwar years showed that to convert one currency into another according to the foreign exchange rate does not give an accurate measure of the relative purchasing power of money, but information is not available showing the relative living cost in the United States and India.

Requirements for Discharge from Soviet Army[1]

THE Presidium of the Supreme Soviet of the USSR on September 25, 1945, decreed the demobilization by the end of 1945 of 10 additional age groups [2] from the Red Army (excluding the forces in the Far East). This action affected all noncommissioned army personnel, approximately 32 or 33 years of age and older. (Soviet sources do not give exact age.)

In addition, the decree directed the discharge of the following army personnel regardless of age with the rank of sergeant and lower: (1) Those possessing technical and agricultural skills acquired in schools of high-school or higher levels; (2) those who were teachers before induction; (3) those who when inducted were at least second-year students in the higher institutions of learning; (4) those wounded three or more times; (5) those with more than 7 years' service in the army; and (6) all women, except specialists who express their desire to remain in the army.

[1] Data are from the text of the decree, published in Pravda (Moscow), September 26, 1945 (p. 1).

[2] For basic demobilization law, employment, and other provisions for demobilized Soviet veterans, see Monthly Labor Review, September 1945 (p. 465).

Industrial Injuries

Causes of Accidents in Slaughtering and Meat Packing, 1943[1]

Summary

DETAILED analysis of the records covering nearly 5,300 disabling injuries experienced by slaughtering and meat-packing workers during 1943 indicated that 37 percent of the injuries were hand or finger cases. 15 percent were foot or toe injuries, and 11 percent were back injuries. In the main, the hand and finger injuries were cuts or lacerations, the foot and toe injuries were sprains, bruises, and fractures, and back injuries were sprains. The principal agencies involved in the accidents which produced the injuries and the proportion of injuries ascribed to each were as follows: Hand tools, including knives and meathooks, 19.8 percent; vehicles, principally hand trucks, 15.3 percent; and working surfaces, 15.1 percent. Broadly speaking, the principal unsafe working conditions involved in the injury-producing accidents studied—slippery working surfaces and tools or materials placed unsafely—may be characterized as failures to maintain good housekeeping. Among the various categories of unsafe acts which contributed to the occurrence of accidents, that of gripping objects insecurely or taking a wrong hold was outstanding. Specifically, the most common unsafe act in this group consisted of mishandling knives.

The cases included in this analysis were taken from the records of 30 slaughtering and packing plants. A representative of the Bureau visited each of these plants and, as far as possible, transcribed from their records the following items regarding each accident: Place where the accident occurred; nature and extent of the resulting injury; type of accident; the unsafe condition and the unsafe act which led to the accident; and the object or substance (agency) which caused the injury. These data were then analyzed according to the American Recommended Practice for Compiling Industrial-Accident Causes, approved by the American Standards Association.

In some instances all the desired details were not available. For this reason, the number of cases analyzed in respect to particular accident factors varied considerably. All parts of the cause analysis, however, were based upon the records of at least 29 plants. The plants visited were all integrated establishments carrying on both

[1] Prepared in the Bureau's Industrial Hazards Division by Frank S. McElroy and George R. McCormack. A previous article in the November issue of the Monthly Labor Review summarized the general accident record of the industry. The two articles, supplemented by a section on the prevention of specific accidents and including the tables on which the discussion is based, will be presented in a forthcoming bulletin.

slaughtering and meat-packing operations, so that all phases of the industry were represented. The entire group employed approximately 60,000 workers. The plants were in 18 States, providing a cross section representing practically all the centers of the industry.

Disabling Injuries

Although it is commonly recognized that personal protective equipment seldom prevents accidents, its use as a means of minimizing the probability of injury when accidents occur is generally considered fundamental to most successful safety programs. In the course of this survey, however, the Bureau representatives, who visited the various cooperating plants, repeatedly were impressed by the fact that relatively few of the workers were utilizing the personal safety devices known to be available. Few knives were equipped with guards to prevent the hand from slipping down over the blade. The use of wire-mesh gloves was far from universal. Similarly, it was observed that goggles were not generally worn in grinding and bone-crushing operations, nor were hard hats commonly worn in the operations involving exposure to falling materials. The use of safety shoes when handling heavy materials was also an obviously necessary precaution which was ignored more often than it was put into practice. In contrast, it was observed that the use of leather aprons for protection against body injuries was quite common.

Inquiries addressed to the safety engineers of the industry as to why personal protective devices were not more generally used elicited the explanation that the workers generally considered the use of such equipment an inconvenience. Strangely enough, it was emphasized that the resistance to the general use of protective equipment was greatest among the more experienced workers. A further factor of importance in this respect was that, because of the war, the supply of such devices was limited.

The general pattern formed by the injuries for which full details were obtained bore out these observations and indicated clearly a need of an expansion in the use of protective equipment. More than a fourth of all the injuries reported consisted of cuts or lacerations to fingers or hands, largely inflicted by knives. The use of wire-mesh gloves undoubtedly would have prevented a large proportion of these injuries. Likewise, the use of safety shoes by workers handling heavy materials probably would have prevented an appreciable proportion of the injuries characterized as cuts, bruises, and fractures of the toes or feet, which together included over 10 percent of all disabling injuries. Eye injuries were not numerous, nor were injuries to the skull. Nevertheless, practically all—nearly 4 percent of the cases reported—might have been prevented by the use of goggles or hard hats. From these data, it appears entirely safe to say that at least a third of all disabling injuries in the industry during 1943 could have been avoided through the use of personal protective equipment.

TYPES OF DISABLING INJURIES

Over 81 percent of the reported disabilities resulted from 3 general types of injuries: 34 percent were cuts or lacerations, 27 percent were

bruises, and 20 percent were strains or sprains. The cuts and lacerations were predominantly finger, hand, and arm injuries, although there was also a substantial number of head, foot, and leg cuts. Cuts on the trunk were infrequent. Bruises, on the other hand, occurred in considerable numbers to all parts of the body. Back, shoulder, and foot cases were particularly prominent among the injuries characterized as strains or sprains.

As a group, fracture cases represented about 7 percent of the total volume of disabilities, and burns and scalds nearly 5 percent. Broken toes and fingers were most common among the fracture cases. This group also included several cases of fractured skull which resulted in death. Burns and scalds most commonly affected the upper or lower extremities, but also included a considerable number of eye burns.

The volume of hernia cases must be considered as particularly significant. Nearly 2 percent of all disabling injuries reported were of this character. As hernias almost invariably arise from overexertion, this relatively high proportion should be interpreted as indicating a need for close investigation and possible revision of the material-handling procedures in the industry.

The problem of guarding against infection is generally recognized as of utmost importance in the slaughtering and meat-packing industry. In some plants the practice is to send any worker home who experiences an injury involving a break in the skin, no matter how minor. In spite of preventive efforts, however, a rather high proportion of infections was reported.

One in every 4 of the disabling cuts or lacerations involved infection and, somewhat surprisingly, 1 in every 25 of the disabling bruises. For the entire group of disabling injuries, the average of infections was about 1 in 10.

Nondisabling Injuries

Because of the fact that records of nondisabling injuries are difficult to maintain and therefore not generally available, the customary procedure in evaluating the injury record of a plant or an industry is to consider only the disabling injuries. The frequency rates used for comparison, therefore, present only a part of the injury picture. It is true that the disabling injuries represent the more serious segment of the accident problem, but it is also recognized that the nondisabling cases, because of their great number, present a problem of considerable magnitude. Particularly in respect to costs, it is frequently maintained that the nondisabling injuries are just as important as the more serious disabling injuries. Nearly every nondisabling injury results in the loss of some productive time, even though the injured person does not leave the premises.

Studies made over a long period in a wide variety of plants have indicated that for manufacturing as a whole about 29 nondisabling injuries occur, on the average, for every disabling injury.[2] This generality has received wide acceptance as a basis for making broad comparisons. Its author, however, has pointed out that this ratio cannot be considered as representative of conditions in any specific industry and that it is to be expected that there will be wide variations in the experience of different industries or of different plants.

[2] Industrial Accident Prevention, by H. W. Heinrich, New York, McGraw-Hill Book Co., 1941.

In the present survey an attempt was made to collect information concerning nondisabling injuries in order to provide some indication of the volume of such injuries in the slaughtering and meat-packing industry and, incidentally, to indicate how the record of this industry differs from the ratio generally accepted as normal for manufacturing as a whole. However, complete records of nondisabling injuries were obtained in only three of the plants visited. The sample, therefore, was insufficient to support more than a tentative generalization.

The combined records of the three plants listed a total of 30,499 work injuries reported to their medical or first-aid offices and there treated. Of these, 337 were disabling injuries. For the group, therefore, the ratio was approximately 90 nondisabling injuries for every disabling case. Among the three plants, however, the ratio varied widely.

In Plant A the ratio of nondisabling to disabling injuries was 65 to 1. This plant had a medical office with both a doctor and registered nurses in attendance at all times, and strictly enforced the requirement that all injuries be reported to that office. A full-time safety engineer was employed and a safety committee of employees had been organized. Goggles, knife guards, wire-mesh gloves, leather aprons, and arm guards were supplied, and their use was mandatory in occupations for which such equipment was considered necessary. The use of safety shoes was optional. This was a large plant with over 3,400 employees. Its injury-frequency rate in 1943 was 20.2.

In Plant B there were 99 nondisabling injuries for every disabling injury. The records here indicated that each injury required an average of 2.4 treatments in the first-aid room. There were no records, however, to indicate the amount of time consumed in those treatments. As a bare minimum, it seems reasonable to assume that each visit to the infirmary would probably consume at least a half hour of the injured employee's time. On this basis, each nondisabling injury would represent the loss of about 1.2 hours. In addition to the direct cost of this time in wages, which in the aggregate reaches a substantial amount, the cost of providing a staff and facilities to administer the treatments is also involved. When the volume of treatments is large the cost of maintaining the first-aid facilities also is large.

This particular plant had no medical staff, but did have a first-aid room staffed with registered nurses and assistants who had been given special first-aid training. A plant safety committee, composed of foremen, had been organized, but there was no full-time safety engineer. Knife guards and wire-mesh gloves were mandatory in certain operations. This, also, was a large plant, with 1,850 employees. Its injury-frequency rate was 22.3.

In Plant C there were 104 nondisabling injuries for every case involving disability. This, too, was a large plant, with an injury-frequency rate of 22.2. Both a doctor and a staff of registered nurses were constantly on duty in the medical office. The plant employed a full-time safety engineer, but had no safety committee. The use of personal protective equipment, such as gloves, safety shoes, aprons, and hard hats, was optional. The medical-office records in this plant indicated an average of 1.9 treatments per injury reported.

In Plant C records were compiled by the Bureau from which it was possible to determine the nature of each of the nondisabling injuries,

as well as the nature of the disabling injuries. Except for the fact that this plant had a lower proportion of disabling cuts and lacerations than prevailed in the industry sample, the pattern of its disabling injuries corresponded closely with that of the industry sample. The pattern of nondisabling injuries in Plant C, therefore, may be taken as a reasonable approximation of the distribution probably prevailing in other plants even though the ratios of nondisabling to disabling cases may not be accepted as typical.

Among the 15,384 injuries treated in Plant C, approximately half were classified as cuts or lacerations. Within this group there were 302 nondisabling injuries for every disabling case. Burns and scalds were relatively unimportant numerically among the disabling cases, but represented over 3 percent of the nondisabling injuries. Specifically, there were 234 nondisabling burns or scalds for each disabling case of this category. Industrial-disease cases (primarily dermatitis), presented a similar picture with a ratio of 457 nondisabling cases for each disabling case. A much higher proportion of the injuries classified as bruises and contusions, or as sprains or strains, was disabling. In these two groups the ratios of nondisabling to disabling injuries were, respectively, 28 to 1 and 18 to 1. Among the more serious injury classifications, two-thirds of the fractures, half of the hernia cases, and all of the amputations were reported as disabling. Eventually, when the corrective operations are performed, the rest of the hernia cases will have to be rated as disabling.

Broadly speaking, the importance of the data relating to nondisabling injuries lies in the impressive totals, which emphasize even more than the figures on disabling injuries the magnitude of the safety problem. They also lend greater emphasis to the need for increased efforts to guard against cuts, burns, and industrial diseases.

Repeat Injuries

It was apparent from the large number of nondisabling injuries recorded that many individual workers must have experienced several such injuries in the course of the year. This was readily substantiated by reference to the medical-office records. In 1 plant the Bureau's representative matched the medical records with the employment records to answer the related question as to how many employees worked the entire period without experiencing any injury.

The plant in which these records were obtained was a medium-sized establishment with an average employment of about 675 workers. Hog dressing and packing was the principal activity, although some beef and small-stock dressing was also carried on. The establishment had no safety engineer, but had a safety committee composed of management officials. The first-aid room was staffed from 6 a. m. to 6 p. m. by registered nurses and at other times by an employee who had been given special first-aid training. As the plant normally operated only one shift, a registered nurse was on duty during practically all the operating hours. The chairman of the safety committee reported that knife sheaths, arm guards, stomach guards, and mesh gloves were provided and that their use was mandatory in operations in which they were considered necessary. The plant injury-frequency rate was 43.7.

The personnel records were checked first, and the names of all workers who had been employed throughout the 12-month period were listed. Office and executive personnel were then eliminated from the list. The remaining 330 names were then checked against the records of the first-aid room and all entries for these employees were tabulated.

This selected group of 330 employees had experienced a total of 1,279 injuries—an average of nearly 4 injuries per individual. However, 106 employees in the group had had no injuries during the year, 32 had each received treatment for only 1 injury, and 28 others had each experienced 2 injuries. In the group 82 workers had from 3 to 5 injuries each; 53, from 6 to 10 injuries; and 29, more than 10 injuries. In other words, two-thirds of the entire group were injured at least once during the year, approximately half 3 or more times, and about a fourth more than 5 times.

The largest number of injuries reported for any individual was 31. This employee worked in the shipping department. Twenty-three of his injuries were cuts or lacerations and 8 were bruises. None were disabling. Among the 23 cuts or lacerations, 15 were finger injuries, 5 were hand injuries, 2 were trunk injuries, and 1 was a foot injury. In contrast to his experience, it is pertinent to note that, out of the 55 shipping-department workers included in the group, 27 had experienced no injuries during the year.

The second largest volume of injuries to a single individual was 27. This employee worked on the killing floor. All but 1 of his injuries were cuts or lacerations, this exception having been ascribed to a foreign body in the eye. None of his injuries were disabling.

Four employees, 1 in the hog-dressing department and the others in the beef cutting and boning department, each had from 21 to 25 injuries in the year—all nondisabling. The employee working in the hog-killing department had 22 injuries, all of which were cuts or lacerations; 19 of the cuts were injuries to his fingers or thumbs. The 3 workers in the beef cutting and boning department together experienced 67 injuries, of which 53 were cuts and lacerations. One of the 3 workers, however, had 4 eye injuries, 3 of which were the result of foreign bodies lodging in his eyes. One of the other workers in this group reported 5 bruises—2 on the finger, 2 on the trunk, and 1 on his foot.

Six workers were listed as having had from 16 to 20 injuries each during the year. Their combined record included 100 nondisabling and 2 disabling injuries. Three of these individuals were employed in the hog-dressing department, 2 in the maintenance department, and 1 in the small stock dressing department. Practically all the 33 injuries reported for 2 of the 3 employees in the hog-dressing department were cuts or lacerations. The third worker, however, had a somewhat different pattern of injuries; his 17 injuries included 9 burns or scalds, 6 cuts or lacerations, 1 strain, and 1 case of a foreign body lodging in his eye. About half of the 36 injuries experienced by the 2 maintenance workers and the majority of the injuries sustained by the employee of the small stock dressing department were cuts and lacerations.

Some of the plant departments were rather thinly represented among the 330 employees for whom these records were tabulated, and, therefore, no significant comparisons could be made. There

were, however, 7 departments for which sufficient employment was included to furnish some indication of the probability of their workers' experiencing an injury. In the hog-dressing department 11 out of every 12 workers had at least one injury during the year. In the beef cutting and boning department 9 out of every 10 workers were injured; in the beef-dressing department, the sausage department, and the maintenance department the ratio was 4 out of 5; and in the smoked-meat and shipping departments it was 1 out of 2.

Agencies of Injury, and Accident Types

THE "AGENCIES"

In many respects the determination of the particular physical items which are most commonly involved in the occurrence of injuries constitutes the fundamental step in the development of a successful safety program. When these items are known, it becomes possible to take direct action to learn why and how they contribute to the occurrence of injuries, and then to take measures to overcome the accident-producing possibilities of these items. To permit the precise determination of these items, which are commonly termed "agencies," the American Recommended Practice for Compiling Industrial Accident Causes defines an agency as "the object or substance which is most closely associated with the injury, and which in general could have been properly guarded or corrected."

Analysis based upon this definition points directly to hand tools, vehicles, and working surfaces as the outstanding injury-producing agencies in the slaughtering and meat-packing industry. Hand tools were the indicated agencies in nearly 20 percent of the cases analyzed, and in more than three-fourths of these, the specific tool involved was a knife. Vehicles (primarily hand trucks) were involved in 15 percent of the accidents, and working surfaces in another 15 percent. In the latter group, slippery and rough floors were the predominating agencies. Packages and packing materials, such as barrels, boxes, kegs, cans, drums, etc., were the agencies responsible for 8.5 percent of the injuries. Projecting bones in cuts of meat accounted for 5.6 percent more. Machines, other than elevators or conveyors, were responsible for 3.7 percent of the injuries, and conveyors for another 3.7 percent. Hot substances and chemicals together were the agencies involved in 5 percent of the injury cases, stairways in 3.3 percent, and animals in 2.9 percent.

Elevators were involved in less than 1 percent of the accidents, but their importance as an injury-producing agency was magnified by the seriousness of the resulting injuries. Among the 46 disabling injuries associated with elevators, 2 resulted in death, 4 developed into permanent impairments, and the remaining 40 caused the loss of 1,040 man-days from work. The average of 26 days of lost time for each case of temporary disability associated with elevators was double that for all temporary disabilities and substantially more than the similar averages for cases involving any other agencies.

Accidents associated with machines likewise achieved a greater importance than was indicated by their number, owing to the seriousness of the resulting injuries. Among the injuries ascribed to machines there were no fatalities, but the proportion of permanent

impairments in this group was very high. Among the injuries resulting from contact with the point of operation of machines, over a third resulted in permanent impairments, and among those involving contact with other parts of machines, the proportion of permanent impairments reached nearly 1 in 4.

TYPES OF ACCIDENTS

Nearly 30 percent of the injuries for which details were available resulted from accidents in which the injured person struck against some object. In nearly half of these cases the object was a knife. In a substantial number of instances, however, the object struck was a sharp bone in a piece of meat, a hand truck, or a box or barrel.

The knife accidents in this group included a considerable number of cases in which the worker's hand slipped off the handle onto the blade when the knife encountered a bone or other resistance. There were also numerous instances in which a sticker's free hand or arm was knocked against his knife by a suspended hog or by a reflex kick of an incompletely stunned steer. Most of the "striking-against" accidents involving vehicles were cases of workers bumping into hand trucks which had been left standing in walkways or in the working areas. Similarly, many of the accidents in this group which involved contact with boxes, barrels, etc., were cases of bumping into materials which infringed on the aisles or work spaces.

Greasy floors played an important part in some of these accidents by causing slips which threw the workers against nearby objects.

Accidents in which the injured workers were struck by moving, falling, or flying objects accounted for over 22 percent of the injuries. Hand trucks, hand tools, conveyors, and packaged materials were the agencies most commonly involved in these accidents.

Falls, which caused 17 percent of the reported injuries, constituted the third most common type of accident. About a fourth of these accidents were falls from one level to another, with those on stairways constituting half of this subgroup. Most of the falls on level surfaces occurred in the working areas, and a majority resulted from slips on wet or greasy floors.

As a group, the accidents classified as slips and overexertion accounted for 16 percent of the reported injuries. Three-fourths of these injuries were directly attributable to overexertion in lifting or moving heavy materials or equipment. The other accidents in the group were cases in which the workers slipped on wet, greasy, or irregular surfaces or stairs and suffered strains or sprains in trying to keep from falling.

Accidents caused by the workers being "caught in, on, or between" various objects were responsible for nearly 9 percent of the injuries. The majority of these involved crushing injuries, such as those of fingers and hands pinched between materials or caught in the moving parts of machinery, and of persons pinioned between vehicles and stationary objects or between elevator cars and the walls of the elevator shafts. Many of these injuries were very serious, nearly 1 in every 6 having resulted in a permanent impairment—a much higher proportion than prevailed among the injuries arising from any other type of accident.

Other types of accidents included contacts with hot substances, causing nearly 4 percent of the injuries. These injuries ordinarily were not severe, although 1 of the 8 deaths included in the cases analyzed resulted from burns caused by hot resin. Injuries resulting from the inhalation, absorption, or ingestion of chemicals, dusts, and fumes constituted about 2 percent of the reported disabilities. These were principally cases of chemical burns or of dermatitis.

Accident Causes

It is generally recognized that every accident may be traced to the existence of an unsafe working condition, to the commission of an unsafe act by some individual, or to a combination of these accident-producing factors. The correction of unsafe working conditions generally is entirely within the powers of management. The avoidance of unsafe acts, on the other hand, requires cooperation and understanding by both management and workers. Management must take the lead, however, by providing safety-minded supervision and by making sure that all workers are acquainted with the hazards of their operations and are familiar with the means of overcoming them.

UNSAFE WORKING CONDITIONS

Basically, the elimination of unsafe working conditions is of no greater importance in accident prevention than the elimination of unsafe acts. However, because management can readily exercise control over unsafe working conditions, and because such situations are usually easily recognized, their correction generally takes first place in the planning of any safety program.

Within individual plants the relative importance of the various types of unsafe conditions noted in the course of the survey varied widely. The broad conclusions derived from the study, therefore, may not be taken as applying in their entirety to any particular plant. It is apparent, however, that slaughtering and meat-packing establishments should carry on the following precautionary activities:

1. Take steps to reduce the hazard of slippery floors.
2. Improve housekeeping conditions, with particular attention to the piling and storage of materials and the placement of hand trucks when not in actual use.
3. Regularly inspect all tools, material, and equipment for defects, and immediately repair or replace all defective items, particularly in respect to knives, floors, hand trucks, and conveyors.
4. Provide and require the use of adequate personal safety equipment in all operations presenting hazards which such equipment can overcome.
5. Provide and require the use of guards on all machinery and elevators.
6. Provide knives which are guarded to prevent the workers' hands from sliding down over the blades.
7. Install guards on all monorails to prevent the wheels from leaving the track.
8. Provide mechanical equipment or sufficient assistance when heavy or bulky materials are to be lifted or moved.

9. Provide rules and traffic-lane markings to govern the movement of vehicles inside the plant and require supervisors to enforce these rules.

Defective Agencies

Defective agencies, including such items as slippery floors, sharp projecting bones in cuts of meat, broken tools or equipment, and projecting nails in barrels or boxes, were involved in 60 percent of the accidents which were found to have occurred because of the existence of unsafe working conditions.

Slippery floors alone were the cause of more than half of the accidents in this group. In many cases the slipperiness was due to bits of fat dropped from the trimming benches or spilled from trays of trimmings as they were moved through the aisles. Water lying upon the greasy surfaces frequently accentuated this unsafe condition. This hazard prevailed in nearly all the dressing, cutting, and trimming rooms studied, but it was not limited to those areas. The most effective method used to overcome greasy floors was to wash them frequently with a water solution of a mild saponifying agent, followed by thorough rinsing. In particularly greasy areas salt was sometimes sprinkled to serve as a nonslip agent. Proper drainage to prevent water from lying in pools on the floor is essential. Wherever practicable, and when permitted by sanitary regulations, smooth floors should be replaced by rough-grained brick or tile. At least two companies are now producing materials especially designed for this purpose. On stairways and ramps it is particularly important that nonslip surfaces and stout handrails be provided to minimize the possibility of falls resulting from slips. In one of the plants visited it was observed that many of the employees had strips of cloth tied around the balls of their feet; the plant superintendent commented that this practice had greatly reduced the number of slipping accidents. In another plant, however, it was reported that this procedure had been tried and discarded because it brought about an increase in such accidents caused by the cloths' absorbing and spreading the grease.

In addition to being slippery, the floors of the plants visited were frequently found to have broken, cracked, or irregular surfaces which presented tripping hazards or caused water to collect in little pools. These irregularities in many instances were sufficient to cause hand trucks to swerve and bump into nearby persons or objects. To a considerable extent, these irregularities in the floors could be ascribed to wear resulting from the use of trucks with metal wheels. The substitution of rubber-tired wheels probably would greatly reduce this floor wear. When such defects exist, however, the obvious safety measure is to make immediate repairs. Hazards of this type are generally quite apparent, and their continued existence can be interpreted only as evidence of slack supervision or of inadequate maintenance.

A considerable volume of injuries resulted from workers' striking sharp pieces of bone as they handled cuts of meat or meat scraps. In the handling of scrap meat, a simple remedy for this hazard is to require the use of forks, rakes, or shovels rather than of hands. The use of hand coverings would also help to reduce the danger of abrasions or lacerations from sharp bones.

Pans and trays which had become broken or battered in service so that their rims or corners were sharp or rough were found to be the

source of many injuries. Most of these were hand cuts or lacerations, which probably would have been avoided if the injured persons had been wearing gloves. The most effective procedure for the elimination of accidents of this type, however, is to provide for frequent inspection of pans and trays and to require the immediate removal of defective pieces, for repair or replacement.

Other defective agencies, which caused fewer but nevertheless substantial numbers of accidents, included defective switches on monorail equipment, which led to the falling of suspended materials on workers; defective hand tools, particularly knives and meathooks; loose or broken binding wire on boxes or crates; and projecting nails in opened barrels or boxes. Most of these unsafe conditions should have been apparent to the supervisors in the normal course of operations, and specifically should not have been overlooked in the course of regular safety inspections. Their frequent contribution to accidents indicates that adquate attention was not given to the detection and repair of such defective equipment.

However, it must be recognized that the seemingly general failure to maintain tools and equipment in good repair during the period covered by this survey resulted to some extent from shortages caused by the war. Labor shortage was particularly acute in respect to skilled maintenance men, and the lack of materials frequently prevented repairs or replacements which otherwise would have been made. The available evidence, however, indicates that considerable improvement in these unsafe conditions could have been accomplished despite the wartime shortages. It seems apparent, therefore, that the industry can substantially reduce its hazards through an intensified program of inspection and immediate repair of defective equipment.

Hazardous Arrangements or Procedures

The importance of careful planning for all plant operations and of maintaining strict supervision throughout such operations as a means of avoiding accidents cannot be overemphasized. When agencies which are not inherently hazardous are arranged or regularly used so as to create hazards, the unsafe conditions and the resulting accidents must be ascribed to a failure on the part of management to exercise one of its proper functions.

Fully a third of the accidents which occurred because of the existence of an unsafe working condition was due to hazardous arrangements or procedures in operations which normally can be carried on safely. More than half of these accidents occurred because materials, tools, or pieces of equipment had been placed and permitted to remain in unsafe positions.

Materials and equipment placed in irregular and unstable piles, stored materials which encroached upon aisles and workplaces, loose materials and equipment left in aisles and workplaces, and congestion of materials in small spaces were common among the poor housekeeping conditions which led to accidents. Many workers were struck by materials which fell from improperly built piles; others were struck by materials which fell from improperly loaded trucks or from unsafely loaded conveyors; and still others tripped over misplaced materials or slipped on scraps of meat which had fallen from overloaded trucks or scrap cans.

In most packing plants it is common practice to have groups of employees work together at long tables. In the interest of efficiency as well as safety it is essential that each of these workers be allowed sufficient space at the table to permit him to work freely without interference from his neighbors. It was found, however, that these spacing requirements were often ignored, with the result that there were many accidents in which employees were injured through contact with their coworkers' knives. Lack of adequate plant space to accommodate the volume of work being performed was generally the underlying reason for this type of unsafe working condition.

In many plants it was apparent that little thought had been given to the problem of controlling vehicular traffic, with the result that considerable numbers of workers were being injured by contact with the hand trucks and tractors which moved through the aisles and workplaces. It was observed that, for the most part, no attempts had been made to separate vehicular and pedestrian traffic in the aisles and passageways, and that only rarely had efforts been made to eliminate the hazards of blind corners, through the installation of mirrors or by the marking off of distinct lanes for traffic in each direction. In some plants vehicular traffic was permitted to continue when the aisles were full of workers entering or leaving the workplaces at the beginning or end of a shift. A great many of the traffic hazards could have been eliminated quite simply through the enforcement of traffic rules and the application of painted lines to guide the movement of vehicles. The fact that these precautions were not taken must be interpreted as meaning that this phase of safety has been seriously neglected.

Another common unsafe procedure was that of regularly requiring or permitting individuals to lift or move heavy materials which should have been handled mechanically or by a team of workers. To prevent strains from overlifting, supervisors should be required to see that sufficient assistance is available and that the persons doing the lifting are given a firm surface on which to stand and plenty of room in which to move.

Inadequately Guarded Agencies

The volume of accidents caused by the lack of proper guards on machinery or other hazardous equipment was small, but the numerical insignificance of the group was more than overcome by the general severity of the resulting injuries. Only about 4 percent of the accidents originating in unsafe working conditions were ascribed to inadequate guarding. One in every three of these accidents, however, resulted in an injury involving some form of permanent impairment. This tendency to produce serious injuries was even more striking in the subgroup composed only of accidents involving inadequately guarded machines. In the latter group over half the resulting injuries were permanent impairments.

It is generally recognized that the power saws used in the slaughtering and meat-packing industry are very difficult to guard because of the size and irregular shape of the materials to be cut. In no plant visited were any guards attached at the point of operation of these saws. Most of the persons interviewed stated that they knew of no practical method of applying such guards. In some plants, however, methods had been worked out to make it unnecessary for the operator

to bring his hands into proximity with the saw blade. These safety methods included the use of a sliding section in the saw table on which the meat was pushed up to the saw and the use of rakes or hoes to remove the cut pieces from the vicinity of the blade.

Grinders and mixers into which it was possible for the operator to insert his hands were also the cause of a number of accidents. These machines can be and are made to be practically injury-proof simply by providing a feeding throat longer than the arm of any possible operator. The fact that such injuries were reported, therefore, indicates an indifference to safety which is difficult to understand in view of the probable cost of the serious injuries which are likely to occur in the use of unprotected machines of this type. Guillotines, or shears, and head splitters similarly are machines which generally can be guarded to protect the operators, but which were reported as having been involved in some accidents.

Inadequately guarded elevators were the source of several very severe injuries. In some instances it was reported that the cars had no gates or that the gates which were provided were ineffective to prevent passengers from extending parts of their bodies beyond the cars into the hoistway. As a result, several workers who allowed their feet to project beyond the edge of the car lost their toes or parts of their feet when they were pinched between the car floor and projections on the hoistway wall. The elimination of projections or pinch points inside elevator hoistways and the provision of adequate enclosures for the elevator cars have long been basic safety principles. The failure to provide such safeguards constitutes a definite unsafe condition.

Other reported elevator accidents included several instances in which workers had opened hoistway gates while the car was at some other level and had then fallen into the shaft, or had fallen into the shaft through a gate which had been left standing open. These cases also must be attributed to a lack of the fundamental safeguards which are universally accepted as necessary for the safe operation of elevators. Hoistway openings should always be protected by gates which cannot be opened from outside the hoistway except by means of a special key. These gates should be so constructed that they will effectually prevent a person from inserting any part of his body into the shaft when they are closed, and should be so interlocked with the car that the car cannot be moved from a landing before the gate is closed and locked.

UNSAFE ACTS

For the purpose of accident analysis an unsafe act is defined as "a violation of a commonly accepted safe procedure." [3] Literally this definition means that no personal action shall be designated as unsafe unless there was a reasonable and less-hazardous alternative method or procedure. There is, however, no implication that the alternative safe procedure must have been known to the person who acted in an unsafe manner, nor that his unsafe act was the result of a considered choice between the two possible procedures. In many instances it is apparent that the individual knew the safe procedure but consciously decided not to follow it. In other cases circumstances

[3] American Recommended Practice for Compiling Industrial Accident Causes, approved by the American Standards Association, August 1, 1941.

indicate that the person who acted unsafely did so, not as a matter of choice, but simply because he did not know the alternative safe method. The first step toward the elimination of unsafe acts, therefore, consists of making sure that all workers are thoroughly instructed in the safe methods of performing their duties and that they are familiar with the hazards connected with deviations from those safe procedures. The second essential step is to exercise strict supervision to see that unsafe procedures are prohibited.

Most of the accidents which occurred because of the commission of an unsafe act were associated with three general groups of unsafe acts: Using unsafe equipment, using hands instead of equipment, or using equipment unsafely; incorrect lifting; and assuming an unsafe position or posture. More specifically, the analysis indicated that a program of instruction and enforcement for the elimination of accident-producing unsafe acts should emphasize proper methods for the following operations: (1) Using hand tools, particularly knives, (2) handling cuts of meat and heavy packages, such as boxes, barrels, and crates, (3) loading and using hand trucks, (4) lifting heavy materials, and (5) piling or storing materials.

Using Unsafe Equipment or Using Equipment Unsafely

The unsafe procedures in this group were factors in the occurrence of over half of the accidents associated with unsafe acts. Within the group the outstanding type of unsafe act was that of taking an incorrect hold or not maintaining a good grip upon objects being handled. Specifically, these included many cases in which materials or tools slipped from the worker's hands or were deflected against himself or against a coworker because he attempted to handle the material when his hands were greasy; because he grasped the material at a sharp or rough spot which caused him to release his grip; or simply because the material or tool was not held firmly enough to control its movements. Knives, hand trucks, meathooks, boxes, barrels, and crates were the agencies most commonly involved in these accidents. Cuts on the hands and pinched or crushed fingers or feet were the most common injuries resulting from these practices.

The unsafe procedure of holding on to the corners of the load or grasping the handle supports instead of holding on to the handle while pushing four-wheeled meat trucks resulted in a substantial number of injuries arising from the operators' hands being pinched against fixed objects. Other examples of the misuse of plant vehicles resulting in accidents included such unsafe acts as the lack of care at blind corners or in congested areas and pulling hand trucks instead of pushing them.

Unsafe Position or Posture

Nearly 20 percent of the accidents resulting from unsafe acts were the direct outcome of the injured person's placing himself unnecessarily in an unsafe position or posture. These unsafe practices included such actions as attempting to adjust or repair moving machines, elevators, or conveyors; working, standing, or walking in the path of moving vehicles; unnecessarily working or walking too close to other workers who were performing hazardous operations; climbing on boxes or barrels instead of using ladders; taking shortcuts instead of

using the provided walkways; stepping or climbing over materials instead of walking around them; unnecessarily approaching conveyors or other moving equipment; working in cramped positions; and riding in an unsafe position on vehicles or elevators. The most prominent unsafe act in this general category, however, was that of inattention to footing in areas known to be slippery, particularly while carrying materials.

Unsafe working conditions, particularly conditions created by poor housekeeping, were also involved in many of the accidents associated with the act of assuming an unsafe position. In these instances the correction of the unsafe working condition, which would have eliminated the possibility of the worker's exposing himself to the hazard, would have been the most effective safety measures. Nevertheless, it is apparent that workers should be more thoroughly trained to recognize the hazards of their job so that they may avoid those dangers.

Unsafe Lifting

Injuries resulting from manual lifting of heavy objects present a serious problem in slaughtering and meat-packing plants. In essence, every accident of this type is a case of lifting excessive weight—that is, excessive under the existing circumstances, for the individual involved. Variations in the strength and skill of different individuals make the determination of what is a safe maximum weight to be lifted by one person very difficult if not impossible. There can be no question, however, that a knowledge of and the strict application of proper lifting procedure—lifting with the legs instead of the back—will render safe the handling of greater weights than can safely be lifted by the hit-or-miss method of "grab and jerk." In classifying the lifting accidents, an effort was made to exclude from this unsafe-act classification those cases in which individuals attempted to lift weights which obviously should have been handled mechanically or by a team. As far as possible, those included represent injuries which resulted from lifting weights ordinarily handled by individuals and normally considered to be within the lifting ability of most workers. These cases represented nearly 18 percent of all accidents resulting from unsafe acts. Although the injuries which these accidents caused were practically all of a temporary nature, they included a considerable volume of hernia cases and severe back strains which required prolonged treatment.

It is frequently impossible to specify exactly what was done incorrectly in certain lifting accidents. In most cases the injured person can report only that he was lifting when he suddenly felt pain. Only rarely is there a witness who was observing the operation with sufficient care to identify accurately the specific faulty procedure. It is well known, however, that strains, sprains, and hernias frequently result from lifting with the back muscles instead of the leg muscles; from lifting in cramped or awkward positions; or from lifting while standing on irregular or insecure surfaces. Most of the accidents in this group undoubtedly resulted from one or the other of these unsafe procedures.

Other Unsafe Acts

Among the various other types of unsafe acts which produced accidents in sufficient volume to indicate that they are of fairly common occurrence were the following: Overloading or insecurely loading vehicles; operating or working at unsafe speeds, including the practice of throwing materials instead of carrying or passing them; running in the workplaces or on stairways; and jumping from vehicles or platforms. Operating equipment without authority, or failing to warn others before starting equipment, and the failure to secure equipment so that it could not be put in motion while being repaired or adjusted also were common causes of accidents.

Industrial Relations

Joint Industrial Councils Law of Belgium, 1945[1]

NATIONAL and regional joint councils in branches of industry, commerce, or agriculture in Belgium are to be organized, and will operate, in future, under a decree law of June 9, 1945. Interested employer and worker organizations, or the Government, may request the creation of such joint councils. For regional councils, request may also be made by the national joint councils. The authority of the joint councils will extend to determination of working conditions and the prevention or conciliation of collective disputes. This law gives formal authorization to a system of joint councils which developed in Belgium after World War I, was suppressed by the Germans in 1940, and was revived by the Belgians after liberation.

The authority of joint councils, according to a report to the Regent on the decree, is based on the confidence which workers and employers place in the members who represent them, and on the representative and free character of the organizations themselves. The suppression of the councils by the Germans was a severe blow to Belgian national institutions; their revival as soon as Belgium regained its independence permitted the solution of difficult problems concerning working conditions in a spirit of mutual understanding.

Creation and Membership

In each branch of industry, commerce, or agriculture, a joint council is to be organized by decree, on request of the interested employer and worker organizations presented to the competent Minister, or on initiation by the Government after consultation with the interested worker and employer organizations. Regional joint councils may be created by the competent Minister on request of the national joint council or of a representative interested organization. Such councils must respect decisions of the national council. On request of the interested worker or employer organization, separate joint councils may be established for employees and wage earners.

General regulations for joint councils are to be fixed by decree; special regulations will be fixed by each council, with the approval of the Minister.

Members of joint councils (numbering at least 4 representatives each of employers and workers, with equal numbers of substitutes) are to be chosen from lists of candidates prepared by representative workers' and employers' organizations, and appointed by decree. Worker and employer members of the councils may be assisted by

[1] Data are from Revue du Travail, (Ministère du Travail et de la Prévoyance sociale de Belgique Brussels), June-July 1945; and Moniteur Belge (Brussels), July 5, 1945.

technical advisers (the maximum number to be fixed by special regulation) to be appointed by the interested organizations, enabling the members to have expert advice on the subjects under discussion.

To be eligible for appointment on the councils, employers' and workers' representatives must have belonged for at least 5 years to the branch of industry in Belgium which they are to represent. Exceptions to this rule may be made for the heads of the interested organizations.

The presidents and vice presidents of the joint councils are to be appointed by decree from persons who are qualified on social and economic problems, but are independent of the interests that must be considered by the joint council. The secretary, assistant secretary, and clerks (*référendaires*) for each joint council are to be named by the competent Minister.

Powers of the Joint Councils

Fields of activity specifically outlined for the councils are (1) the fixing of wages or remuneration for personnel of different qualifications, especially in connection with the establishment of collective agreements; (2) consultation upon working conditions, particularly those which should be made obligatory by shop rules; (3) assistance to the Government in the preparation and execution of social legislation designed to apply to the branches of industry under consideration; (4) prevention or conciliation of collective disputes; and (5) encouragement of apprenticeship as well as maintenance of close relations with vocational schools and institutions.

Decisions of the joint councils must be unanimous among the members present. Presidents, vice presidents, technical advisers, secretaries, and clerks have no deliberative voice.

On request of the council or of a representative organization, decisions of the joint councils may be made obligatory by decree. If such requests are not complied with, the competent Minister must inform the joint council of the reasons for noncompliance.

Enforcement of Decisions

The enforcement of decisions that are made compulsory is to be carried out by persons named by decree. Such persons are to have access to places where workers are employed and where they are paid. Heads of enterprises, directors, managers, superintendents, and workers must furnish any information required.

The penalty for infraction of compulsory decisions may be a fine of from 100 to 100,000 francs, for each person employed contrary to the said decision, up to a total of 200,000 francs. The penalties are applicable also to a worker who contravenes a decision. Penalties are also provided for interference with the supervision provided for in the decree and for those who make false statements under investigation.

The Minister of Labor and Social Welfare is responsible for administration of the terms of the decree.

Labor Foundation of the Netherlands[1]

FORMATION of the Labor Foundation (*Stichting Van Den Arbeid*) was announced in the Netherlands factories directly after liberation. The foundation was established in accordance with plans prepared by leaders in the wage-earner, agricultural, large-business, and small-business groups during the German occupation. By 1942 the plans to build a permanent organization of workers and employers had taken definite shape. Only formal signing of the provisional act of incorporation was necessary, after the liberation, to make the whole plan operative; this occurred on May 17, 1942.

The constitution of the Labor Foundation states that until industrial conditions become stabilized, the foundation will foster the return of normal relations between workers and employers and maintain or restore order in industrial life. Thereafter the Foundation will work toward a lasting and well-balanced social economy in the Netherlands, based on cooperation between workers and employers.

To achieve these aims, the foundation will (*a*) promote measures for raising the social and cultural standard of Netherlands workers; (*b*) further continued consultation between employers, and workers' organizations in the interests of industrial peace; (*c*) serve employer and worker organizations and governmental departments in an advisory capacity; (d) work for the issuance of regulations—binding on employers and workers who through their organizations are members of the foundation—to govern wages, hours, and other labor conditions, the hiring and dismissal of personnel, the settlement of differences arising in connection with piecework, and social insurance.

Fourteen worker and employer organizations are charter members of the Labor Foundation. These are Netherlands Union of Employers, Central Chamber in Labor Affairs for Employers, General Catholic Employers Society, Roman Catholic Federation of Employers Societies, and Protestant-Christian Employers Federation, representing large industrialists; Kingdom of the Netherlands Small Businessmen's Association, Netherlands Roman Catholic Small Businessmen's Association, and Protestant-Christian Small Businessmen's Association, representing small businessmen; Kingdom of the Netherlands Agricultural Committee, Catholic Netherlands Farmers' and Gardeners' Association, and Christian Farmers' and Gardeners' Association in the Netherlands, representing agricultural interests; and Netherlands Federation of Trade Unions, Roman Catholic Federation of Trade Unions in the Netherlands, Christian National Federation of Trade Unions in the Netherlands, representing labor.

The internal organization of the Foundation provides for joint consultation in so-called "trade councils," between workers and employers in the various branches of industry, as well as nationally and centrally in the management of the Foundation itself.

Cooperative Plan of Trade-Union Members of Foundation

The three trade-union federations participating in the Labor Foundation, namely, the Roman Catholic Federation of Trade Unions,

[1] Data are from report of Stanley K. Hornbeck, United States Ambassador, The Hague, September 23, 1945 (No. 351); from A New Deal for Dutch Labor, by Dr. B. C. Slotemaker, in Knickerbocker Weekly, August 27, 1945; and from restricted sources.

Christian National Federation of Trade Unions, and Netherlands Federation of Trade Unions, immediately after the liberation of the Netherlands and as the result of negotiations during the war, adopted a program of joint action. This plan provided for the establishment of a board of trade centrals, and for industrial councils, sectional industrial councils, and local deliberative councils. The boards and councils are to work for improvement of the social-economic and social-hygienic conditions of the workers and act as collective-bargaining agencies for the purpose of negotiating agreements with employers. Many of the unions included in the program have only recently been revived, or are in the process of being revived, and all are in the process of recruiting their membership anew. The various councils and boards covered by the regulations may for some time, therefore, be little more than "paper" organizations. The new Unity Trade Union Movement, which claims a membership ranking with that of the three cooperating trade-union federations, is not included either in the above program or in the membership of the Labor Foundation.

Joint Action by Employer Members

The employers' organizations are divided into three employers' centers, namely, an undenominational, a Catholic, and a Christian center, which in turn unite in the Governing Council in Labor Affairs, the highest employers' organization. The Board of Trade Centrals, formed by the three trade-union organizations, and the Governing Council for Labor Affairs together form equal governing bodies of the Labor Foundation. Worker and employer organizations of various denominations, but within a given branch of industry, function jointly as the trade councils.

Status of Labor Foundation

The Labor Foundation differs from the former Netherlands High Council for Labor, which was a Government organization instituted by Government leaders, and which served as a center for the discussion of labor disputes. The Netherlands High Council for Labor served mainly to give advice when a new legislative measure was considered which would affect industry or labor; the Labor Foundation plans to aid workers, employers, and Government officials, continuously.

The Labor Foundation already is considered an unofficial but exceedingly important advisory body to the Netherlands Department of Social Affairs.

Immediate Program of Foundation

The emergency program advocated by the Labor Foundation to the Netherlands Government includes the following:

1. Reinstatement to their former positions in society of (*a*) employees who were forced to work outside the country, (*b*) prisoners of war, (*c*) those who were interned as hostages by the enemy or who were interned for other reasons in connection with their objection to enemy occupation, and (*d*) workers in the "underground." If this is not practical or possible, the Foundation proposes an unemployment-benefit fund for aid of these people, to be established officially without

delay, with financial arrangements at the same time for the men included in the foregoing classifications who were unemployed prior to being captured, interned, or forced to flee.

2. The immediate restitution and restoration to former position, with all former privileges, of all those who were dismissed from their positions because of their refusal to do unpatriotic acts, or those who were forced to resign to prevent further degradation, whether these positions were held in public service or in private enterprise.

3. Vindication, with the help of representatives of employers and employees, of those who were peremptorily dismissed, except those whose dismissals were agreed to by regularly constituted authorities.

4. Reintroduction of the normal working week and rest periods.

5. Strong assistance in creation of jobs by the passing of Government measures for immediate rebuilding of demolished areas, for advancement of public works both of a cultural and of a technical nature, for the building of modern homes for workers and middle-class families, and for the wider distribution of utilities.

6. An immediate increase in rations (particularly of food, shoes, blankets, and clothing) and a quick elimination of the black market.

7. Immediate consideration of the control of wages under supervision of the Government, of revision of wages and prices for the improvement of levels of living, and of maintenance of protective regulations passed for the benefit of tenants.

8. Raising allowances to the unemployed above the amount paid before the occupation.

9. Energetic measures for improvement of the general health of the people, with particular assistance in the fight against tuberculosis.

10. Financial provisions by the Government for war invalids, including Netherlanders who were victims of bombing either in the Netherlands or in a foreign country.

11. Improved financial provision for sailors who lost their possessions because of the war or who became totally or partially disabled, and provisions also for the survivors of seamen who lost their lives in the war.

Wage Agreements and Settlement of Disputes in Norway, 1945[1]

Collective Bargaining and Wage Agreements

COLLECTIVE bargaining in Norway relative to wages, hours and working conditions is normally conducted on a national basis, the workers being represented by the National Federation of Trade-Unions, and the employers by the Norwegian Employers' Association.

Before liberation, representatives in London and Stockholm of these two groups were engaged in the negotiation of terms and conditions of employment which were to become effective upon the return to Norway of the Government in Exile. The results of these negotia-

[1] Data are from report of Walter Galenson, labor attaché, United States Embassy, Oslo, August 21, 1945 (No. 10), including translation of the provisional decree of September 15, 1944; airgrams A-51 and A-75 from the United States Embassy, Oslo, dated August 23 and September 17, 1945; report of O. E. Heskin, United States Embassy, Oslo, August 25, 1945 (No. 12); and news releases of the Royal Norwegian Information Service, September 14 and 29 and October 5, 1945.

tions were embodied in a provisional act of September 15, 1944, and an agreement of May 8, 1945, providing for certain wage increases. The former, which will remain valid until May 8, 1946, reinstated the wage schedules in effect prior to April 9, 1940, and provided for the revision of wage agreements through collective bargaining or, if necessary, by compulsory arbitration. The latter raised wages generally by 30 øre [2] per hour for men and 20 øre for women, and by 17.5 percent in the case of salaried personnel.

In August 1945, the unions announced that the Wage Agreement of May 8 had proved unsatisfactory and that they could no longer adhere to it. The employers maintained that production, which was 40 percent below the prewar level, and the adverse economic factors attendant to the reconstruction period, would not support an increased wage. After negotiations between employer and trade-union organizations failed to affect an agreement, the National Wage Board, as provided in the Norwegian provisional act of September 15, 1944, reached a decision concerning the matter on September 12, 1945, which increased hourly wage rates approximately 15 percent for practically all categories of industrial workers. This increase, together with previous increases since 1940, is expected to compensate the workers for approximately 75 percent of the increased cost of living in Norway since January of that year. The decision further provides that workers may request additional increases in wages whenever in the future the Government cost-of-living index shows a rise of 5 percent or more, and that employers similarly have the right to request a reduction in wages whenever the index drops 5 percent or more.

To prevent an increase in prices as a result of the wage increase, the Government plans, by means of income from the current sales tax on all commodities, to subsidize essential commodities at retail.

The above decision does not apply to workers in agriculture, forestry, private banks, and whaling. On September 26, 1945, the Wage Board raised the wages in forestry considerably, in some cases as much as 20 percent. Wages of whale gunners were reduced about 16 percent as the result of negotiations. Their average wage during the 1939–40 season was about 28,000 kroner; under the new agreement, wages for the 1945–46 season will be about 23,350 kroner.

Settlement of Labor Disputes

The provisional act of September 15, 1944, as stated above, provided for compulsory arbitration only after collective bargaining, negotiation, and conciliation have failed to effect satisfactory wage agreements. It established a Wage Board of seven members, financed by the State, to make decisions in cases referred to it for arbitration.

The public mediator may refer cases to the Wage Board if the negotiators for the parties have agreed that settlement is to be made and the settlement is rejected by one or both parties in the course of further discussion. The Department for Social Affairs may refer cases to the Board when the public mediator has considered a media-

[2] At current foreign exchange rates the krone (100 øre) averages 20.18 cents in United States money. Studies in the interwar period show that the foreign exchange rate is not an accurate measure of the domestic purchasing power of two currencies, but no information is available which makes possible the measurement of relative living costs in the United States and in other countries.

tion proposal unwarranted or when proposals by the public mediator have been rejected by representatives of the disputing parties.

Members of the Wage Board are appointed by the King, or by a person authorized by him, and serve in such capacity until further notice. The chairman and vice chairman of the Board are appointed in the same manner. Two of the members of the board, with deputies, are appointed subsequent to nomination by the Norwegian Employers' Association, and two are appointed subsequent to nomination by the National Federation of Trade-Unions.

Stoppages of work or boycotts because of wage disputes are forbidden until 6 days after negotiation and conciliation have been tried, and negotiations have ended without reaching a settlement of the dispute. Strikes and lock-outs may take place, therefore, only in cases in which unsettled disputes have not been referred to the Wage Board for compulsory arbitration.

The labor court and the court of justice for boycott cases were not to start functioning until such time as the King should determine. Meanwhile, decisions in wage disputes (within wage agreements) and boycott cases were to be made by a special dispute board of 3 members to be appointed by the King or by a person authorized by him.

Industrial Relations in Switzerland, 1938–44[1]

BOTH the total number of collective agreements in effect in Switzerland in 1944 and the number of such agreements which covered the whole country were more than 50 percent greater than in the last prewar year—1938. The construction and building-materials industry ranked first in number of agreements in mid-September 1944, and commerce ranked second. Different clauses of 25 collective agreements were given national scope, and clauses of 31 were given cantonal scope, in the first 3 years after the Federal Parliament early in World War II authorized such extension. Strikes and lock-outs declined markedly in 1939 and 1940, but rose slightly above the 1938 level in 1942, 1943, and 1944. In 1944 settlements were reached in 194 of the 217 disputes which came before the offices of conciliation in the cantons. Cases in which no settlement was reached involved only about one-sixth as many employers and one-eleventh as many workers as were involved in the disputes which were settled.

Collective Agreements

The number of employers and workers covered by collective agreements in Switzerland rose from approximately 9,388 and 64,786, respectively, in 1929, to 44,399 and 258,345, respectively, in 1944. In the same period, workers under national contracts increased from 11,127 to 94,709. The number of collective agreements in force in

[1] Data are from Annuaire Statistique de la Suisse (Bern), 1940, 1943; La Vie Économique (Département Fédéral de l'Économie Publique, Bern), January 1942 and 1945; and reports of Dorothy M. Sells, labor attaché United States Legation, Bern, July 15 and August 15, 1945

Switzerland in 1929, 1938, and mid-September 1944, and the fields of application of the contracts, were as follows:

	Number of contracts		
	1929	1938	1944
Total	303	417	632
One company	112	157	192
One or several localities	146	175	262
One or several cantons	28	63	129
One region	9	5	20
Entire country	8	17	29

According to a study of the 663 collective agreements in effect at the end of 1944, 98 percent of the contracts covered wages, 89 percent duration of work, 83 percent dismissals, 75 percent overtime and night work, 75 percent vacations, 65 percent accidents, 65 percent conciliation and arbitration, and 51 percent military service. Almost a fourth of the agreements were in the construction industry, almost a fifth in commerce, and almost a seventh in the metal and watch industry. The number of contracts in each of the principal industries and the main subjects covered by contracts at the end of 1944 are shown in table 1.

TABLE 1.—*Distribution of Collective Agreements, by Industries, and Main Subjects Covered, in Switzerland, 1944*

Industry	Number of agreements	Percent regulating—				
		Duration of work	Wages	Overtime and night work	Sunday and holiday work	Vacations
Construction	161	97	99	90	86	42
Commerce	125	93	98	61	21	93
Metals and watches	98	92	96	88	84	94
Wood and glass	72	92	93	86	83	78
Food, drink, and tobacco	68	91	95	79	68	90
Clothing	29	83	97	72	52	83
Transport	22	86	95	41	37	86
Graphic arts	19	84	100	63	42	89
Hotels	16	50	88	25	----------	56
Miscellaneous	14	78	78	71	36	57
Textiles	12	17	92	17	17	25
Theaters and cinemas	10	90	90	60	10	80
Horticulture	9	89	89	56	34	78
Public service	8	88	100	63	38	100

General applicability of contracts.—At various times during World War II, the Federal Parliament of Switzerland issued orders (under article 34 of an order of September 21, 1939) which conferred upon the Federal Council the temporary right to make collective agreements generally applicable throughout an industry, if a majority of the employers and of the workers were included under the voluntary agreement, and if certain other specified conditions prevailed. This right has been extended to the end of 1946, and proposals to make this "trial legislation" permanent, when modified according to experience, have been made.

Either of the two parties to a collective contract (or any other associations of workers and employers who would be affected) may request the granting of general applicability, and action within a canton may be taken by the cantonal government with the approval of the Federal Council.

During the first 3 years that this right was exercised, certain clauses in 25 collective agreements were given national scope, and 16 out of

22 cantons made various clauses of 31 agreements generally applicable within the canton. Agreements covering hairdressing, the wholesale furniture industry, men's custom tailoring, and homework on women's lingerie and clothing were made nationally obligatory in their entirety, including clauses dealing with wages and working conditions. Only clauses concerning cost-of-living allowances became obligatory in agreements given national scope in the following industries: Carpentry, plastering and painting, electrical installations, tiling and slate work, locksmithing and building, marble carving, and certain other branches of the building industry.

Labor Disputes

The number and causes of strikes and lock-outs, the number of industries and workers affected, and the number of cases before offices of conciliation, in Switzerland, from 1935 to 1944, are presented in table 2. In all years except 1938, 1939, and 1940, considerably more than half of the strikes were caused by problems relating to wages. Similarly, the number of disputes before the offices of conciliation usually increased when the level of real wages declined.

TABLE 2.—*Strikes and Lock-outs, Disputes Before Conciliation Offices, and Indexes of Real Hourly Earnings in Switzerland, 1935–44*

Year	Strikes and lock-outs									Number of industrial disputes handled by conciliation offices	Indexes of real hourly earnings (1913=100)
	Total	Number of—			Number involving—						
		Enterprises affected	Workers participating	Days of work lost	Wages	Collective contracts	Labor-union problems	Dismissals	Other problems		
1935	17	82	874	15,143	11	1		5		120	175.2
1936	41	302	3,612	38,789	25	6	1	5	4	157	169.1
1937	37	404	6,043	115,648	25	5		4	3	175	161.5
1938	17	38	706	16,299	7	5	2	1	2	166	165.7
1939	7	7	238	4,046	3	2		1	1	97	164.9
1940	6	12	578	1,480	3	2			1	130	154.7
1941	15	36	722	14,311	13		1	2	1	175	144.6
1942	19	31	822	4,030	15	2				230	143.8
1943	19	114	1,069	12,050	19					240	148.7
1944	18	186	1,324	17,690	13	1		1	3	217	153.2

Conciliation of disputes.—In 194 of the 217 disputes which came before the cantonal offices of conciliation in 1944, settlements were reached, affecting 2,942 employers and 35,937 workers. In 68 cases, settlement was the result of agreement between the 2 parties in the course of negotiations, in 126 cases it was brought about by adoption of proposals made by the office of conciliation. Awards were made after arbitration in 42 cases—30 being compulsory and 12 voluntary.

Cases in which no settlement was reached involved only about one-sixth as many employers and one-eleventh as many workers as were involved in the disputes which were settled satisfactorily.

Causes of disputes.—The principal cause of 157 of the cases in which conciliation was successful in 1944 was wages.

After the end of war in 1945, a series of strikes occurred. The basic issue common to all was the demand for increased wages or an increase in the cost-of-living allowance, or both, which the workers contended were necessary to meet the high cost of food and clothing and to make up for a loss in real wages suffered during the war.

Labor Organizations and Conventions

Trade-Union Membership in Canada, 1944[1]

A SUBSTANTIAL increase occurred in Canadian trade-union membership in 1944, bringing the total number to 724,188 at the end of the year. The total was 9 percent over the 1943 level and more than twice the membership of 358,967 in 1939. Of an estimated 2,860,000 nonagricultural wage earners and salaried workers aged 14 years and over, approximately a fourth were trade-union members on December 31, 1944, compared with a fifth a year earlier. The number of local unions increased from 3,735 to 4,123 in the same period, largely because of organization of new locals. Although metalworkers were still the largest organized group, their membership decreased in 1944 by 3.1 percent, to a total of 193,336.

Membership in trade-unions of Canada in 1943 and 1944, by industry group, is shown in table 1.

TABLE 1.—*Distribution of Trade-Union Members in Canada, by Industrial Groups, 1943 and 1944*

Industry group	1943		1944		Percent of change, 1943 to 1944
	Number	Percent of total	Number	Percent of total	
All industries	664,533	100.0	724,188	100.0	+9.0
Mining and quarrying	36,825	5.5	38,601	5.3	+4.8
Metals	199,487	30.0	193,336	26.7	−3.1
Construction	60,084	9.0	57,501	8.0	−5.9
Light, heat, and power	7,918	1.2	9,300	1.3	+17.5
Wood and wood products	38,689	5.8	48,941	6.7	+26.5
Printing and publishing	10,579	1.6	12,212	1.7	+15.4
Steam railway transportation	108,128	16.4	121,245	16.7	+12.1
Other transportation	40,823	6.1	45,236	6.2	+10.8
Services	57,484	8.7	70,675	9.8	+22.9
Clothing, footwear	37,563	5.6	39,592	5.5	+5.4
Textiles	18,084	2.7	27,996	3.9	+54.8
Foods	19,183	2.9	28,737	4.0	+49.8
All other industries	29,686	4.5	30,816	4.2	+3.9

Affiliation of the membership in 1944 appears in table 2. In that year, the Trades and Labor Congress of Canada (284,732 members) and the Canadian Congress of Labor (272,146 members) accounted for nearly 77 percent of the total number of trade-unionists.

[1] Information is from Canada, Labor Gazette (Ottawa), September 1945.

TABLE 2.—*Union Membership and Local Unions in Canada, by Affiliation, 1944*

Affiliation	Number of—	
	Branches	Members
All organizations	4,123	724,188
Trades and Labor Congress of Canada [1]	2,274	284,732
American Federation of Labor [2]	29	9,516
Canadian Congress of Labor [3]	894	272,146
Congress of Industrial Organizations [4]	5	159
Canadian and Catholic Confederation of Labor	296	74,624
International Railway Brotherhoods (Independent) [5]	366	36,147
Canadian Federation of Labor	1	220
Unaffiliated National and International Unions	199	35,433
Unaffiliated Local Unions	59	11,211

[1] The TLC is an affiliate of the AFL in the United States.
[2] This group consists of international unions affiliated with the AFL in the United States, the Canadian branches of which are not affiliated with the Trades and Labor Congress of Canada. The 40 local or federal unions, with 7,115 members, which received their charters directly from the AFL, have been included under the Trades and Labor Congress in the table, as they are affiliated with that body.
[3] The CCL is not affiliated with the CIO in the United States; however, some of its member unions are so affiliated.
[4] This group consists of international unions affiliated with the CIO in the United States, the Canadian branches of which are not affiliated with the Canadian Congress of Labor.
[5] The jurisdiction of the International Railway Brotherhoods covers members in both Canada and the United States.

Meeting of British Trades Union Congress, 1945 [1]

AT THE seventy-seventh meeting of the British Trades Union Congress held between September 10 and 14, 1945, delegates numbered 650 and represented 216 affiliated organizations having 4,460,617 members. The membership declined by 56,663 persons between 1944 and 1945, owing to the slowing down of munitions production which resulted in the withdrawal of a large number of workers from the labor market. Problems of postwar reconstruction received special attention at the sessions. The statements on trade-union policy were particularly important in view of the fact that the Labor Government had previously come into office in Britain.

In defining the attitude toward the Labor Government, the president of the TUC stated that full cooperation would be offered, with the retention of the complete right to offer any criticism of public policy which the TUC felt was deserved.

On the question of future labor controls, the Minister of Labor and National Service informed the meeting that sudden and complete abandonment of such measures would lead to chaos. He added that no one should conclude that because all controls were not lifted at once, such removal was not the ultimate objective. Individual workers are to have complete liberty to earn their livelihood as they prefer, and the sooner this is possible, the better, in the Minister's opinion.

Return of Servicemen to Civilian Life

An emergency resolution dealt with the need for the speediest and most complete reestablishment of normal civilian life. It was

[1] Information is from Labor and Industry in Britain (British Information Services, New York), November 1945; Trades Union Congress, General Council's Report to 77th Annual Congress (London), 1945, and Labor, October 1945; Labor Party and Trades Union Congress, Labor Research (London), October 1945; Labor Monthly (London), October 1945.

stated that the rapid return home of members of the armed forces was of paramount importance but that the rate of demobilization must be consistent with the restoration of settled conditions and the maintenance of peace and order throughout the world. The resolution stated that the TUC was assured that the Labor Government was fully alive to the need for such resettlement, that the problem would be viewed from the standpoint of civilian needs, and that men would not be retained in the military services in unnecessary numbers. Awareness was expressed of the administrative difficulties caused by the sudden end of hostilities (much as the termination of the war was desired) and of the need for revising the general system of release from service. The general council was instructed to make representations to the Government in accordance with the terms of the resolution. One speaker stated: "We cannot afford uniformed unemployment. The man kept idle in the Forces is, in effect, an underemployed or unemployed man who ought to be brought back to civilian life."

Trade-Union Rights

A resolution was approved demanding that the trade-union movement should be given an opportunity of taking a responsible share in the deliberations of the United Nations Organizations; in framing the peace; and in preparing and carrying out programs of postwar reconstruction.

The question of the disposition of the Trade Disputes and Trade Unions Act of 1927 was discussed and the general council's report on the subject was unanimously approved. The general council favored the removal of the law from the statute books. However, in view of various circumstances, it was decided to press for the removal of clauses 5 and 6 only, which would permit civil service unions to reaffiliate with the TUC and enable local authorities (if they desired) to make membership in a union a condition of employment in their service. Otherwise, the matter was to be left for reconsideration after the general election.

Wages, Hours, and Working Conditions

Wages were discussed from many aspects. A rising level of pay was advocated as an essential to higher productive efficiency. The adoption of a governmental policy was urged that would be aimed at correcting, as far as possible, the gross inequality in the distribution of incomes. In helping workers during the transitional period, when their services might not be in demand, a recommendation was made for the payment of basic weekly wages in place of unemployment-insurance benefits, such wages to continue until the individual redundant worker was transferred to other work. A guaranteed weekly wage was endorsed in a resolution directing the general council to prepare proposals for such a guaranty in all industries. The TUC advocated the legal enforcement of all negotiated wage agreements, the payment of "the rate for the job" in all Government employment, and a revision of the conditions for dismissal or suspension under the essential-work orders. It was held that, if the British economy was to be maintained at its full productive power, it was essential that people should have a

regular spending capacity throughout life, which only guaranteed pay would afford.

Regarding the introduction of the 40-hour week, it was pointed out that it might require a period of transition but shorter hours would give a definite incentive to the re-equipment necessary in the country's basic industries. To solve production problems it would not be necessary to draw further on labor reserves, but mechanical and scientific skill should be utilized to the utmost. Support was given to the establishment of the 40-hour week by negotiations within individual industries, which should be legally enforceable. A minimum aim of 2 weeks' vacation with pay was approved.

Financial Questions

After discussions with the Labor Party executive committee, the general council took the position that the most satisfactory basis of valuation for any industry taken over by the Government was "reasonable net maintainable revenue." During the war, transport services were taken over temporarily on the basis of average revenue. When coal royalties were nationalized in 1938, the price was fixed at 16 times the annual revenue. For other industries, it was concluded that negotiations should be held to determine the number of years by which the net revenues should be multiplied, and that a right of appeal should be granted.

An exhaustive report on taxation policy was submitted in which the view was expressed that the Government must play a dominant part in insuring full employment. A combination of redistributive taxation and "deficit spending" would be required. The general council recommended that indirect taxes, which fall on small incomes regressively, should be revised; high direct-tax rates should be retained as long as needed (restoring the allowances that were cut in wartime to relieve the burden on small incomes). The claim of industrialists was regarded as reasonable, whereby the postwar credit of 20 percent of the excess profits tax should be made available at once for re-equipment of plants. A further suggestion was that postwar "boom profits" might be taxed by an income-tax surcharge on all but small corporation profits.

Industrial Disputes

Labor-Management Disputes in October 1945

WORK stoppages in October 1945 were at one of the high points in the Nation's history. Preliminary estimates indicate 560,000 workers involved in new work stoppages during the month and idleness amounting to 7,800,000 man-days resulting from all stoppages in progress during the month.

TABLE 1.—*Strikes and Lock-outs in October 1945, with Comparable Figures for Earlier Periods*

Period	Strikes and lock-outs beginning in the period		Man-days idle during period	
	Number	Workers involved	Number	Percent of available working time
October 1945 [1]	455	560,000	7,800,000	1.27
September 1945 [1]	550	455,000	3,650,000	.61
October 1944	430	222,000	756,000	.10
January to October, inclusive—				
1945	4,225	2,775,000	20,880,000	.29
1944	4,347	1,823,000	7,545,000	.10
1943	3,072	1,582,000	9,851,000	.12
1935-39 average	2,551	1,041,000	14,859,000	.28

[1] Preliminary estimates.

Much of the idleness in October was concentrated in a few large strikes, 60 percent of it resulting from seven large stoppages. Four of these—stoppages of bituminous-coal miners (supervisory dispute), oil workers, northwest lumber workers, and textile workers—began in September.[1] The three described below began in October.

(1) A strike from October 1 to 18, involving about 60,000 longshoremen (AFL), clerks, checkers, and other workers at New York and New Jersey docks, primarily over the question of limitations on sling loads to be provided for in a new contract. This issue finally went to arbitration, the arbitrator being selected jointly by the Secretary of Labor and the National War Labor Board. William. H. Davis, former Chairman of the National War Labor Board, was named as arbitrator on November 1.

(2) A strike of over 15,000 glass workers in plants of the Libby-Owens-Ford and the Pittsburgh Plate Glass Co., beginning October 16. Negotiations for a new union contract with the Federation of Glass, Ceramic and Silica Sand Workers of America were under way

[1] See Monthly Labor Review, November 1945 (p. 975).

when a strike of a few hundred workers occurred at the Libby-Owens-Ford plant in Ottawa, Ill. The companies refused to continue negotiations until that strike was terminated, whereupon employees stopped work at other plants in Ohio, Pennsylvania, Louisiana, Missouri, Oklahoma, and West Virginia. This stoppage continued throughout October and was still in effect at the end of November.

(3) A stoppage, October 29, of a few thousand machinists, some of whom were members of the AFL machinists' union and some members of the United Steel Workers of America (CIO) in the San Francisco Bay area. Both unions were seeking a wage increase of 30 percent. It is estimated that 40,000 to 50,000 workers were made idle when machine shops, shipyards, etc., were picketed or shut down. The employers refused to negotiate with both unions jointly and, although some separate negotiations were carried on, the stoppage was still in effect at the end of November.

Since VJ-day (August 14, 1945) work stoppages have not only been numerous, but some of them have been of comparatively long duration. Many of the immediate labor-management issues are more significant than the misunderstandings, adjustments, and minor disputes that caused stoppages during the war. They involve basic economic factors—the relationships between wages and prices, and among wages, prices, and profits. Reductions in take-home pay through loss of overtime work, shorter workweeks, and downgrading are resisted by workers whose living standards were already affected by wartime shortages of goods and high prices. Such basic issues do not lend themselves easily to the usual methods of settlement by conciliation or mediation. Consequently the strikes have been longer and more difficult to settle.

Activities of U. S. Conciliation Service, September and October 1945

DURING the months of September and October 1945, the U. S. Conciliation Service disposed of 1,352 and 1,825 situations, respectively. During the same months of 1944, 2,290 and 2,325 situations were closed.

Of 358 strikes and lock-outs handled in October 1945, 354 were settled by conciliation; 4 of these were certified to the National War Labor Board. Five of the 358 cases were lock-outs. The records indicate that 369 situations were threatened strikes and 909 were controversies in which employer, employees, or other interested parties asked for the assignment of a Commissioner of Conciliation to assist in the adjustment of the differences. Altogether, 46 cases of all kinds were certified during the month to the National War Labor Board. The remaining 189 situations included 96 arbitrations, 16 technical services, 32 investigations, and 45 requests for information, consultation, and special service.

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Cases Closed by U. S. Conciliation Service in September and October 1945, by Type of Situation and Method of Handling

Method of handling	September 1945					October 1945				
	Total	Strikes and lockouts	Threatened strikes	Controversies	Other situations	Total	Strikes and lockouts	Threatened strikes	Controversies	Other situations
All methods	1,352	231	193	748	180	1,825	358	369	909	189
Settled by conciliation	1,156	231	193	732	-------	1,590	354	369	867	-------
Certified to National War Labor Board	16	-------	-------	16	-------	46	4	-------	42	-------
Decisions rendered in arbitration	66	-------	-------	-------	66	96	-------	-------	-------	96
Technical services completed	14	-------	-------	-------	14	16	-------	-------	-------	16
Investigations, special services	100	-------	-------	-------	100	77	-------	-------	-------	77

Paid Vacations

Legal Provision for Paid Vacations in Argentina

ANNUAL paid vacations of 10 or 15 days were provided by decree No. 1740 of January 24, 1945, for all employed persons in Argentina except domestic servants and employees of national, provincial, and municipal institutions.[1] For persons with less than 5 years of service, the minimum continuous paid vacation is to be 10 days, and for persons with more than 5 years' service, 15 days. "Substitution of employer" does not affect length of service.

Qualification for vacation.—In order to have a right to this vacation, the worker must have rendered service each year during at least half of the workdays between January 1 and December 31 of that year. An employee who has worked the required minimum time during a year, whose contract is terminated for any cause, shall be entitled to compensation equivalent to his pay for a vacation period proportional to the part of the year he has worked. A worker whose contract is terminated, and who has not had a paid vacation during the preceding year because he has not worked half the working days during the year January 1 to December 31, shall be entitled to compensation for the vacation period, provided he has worked at least half of the workdays during the 365 days preceding the termination of the contract.

Time of vacation.—Vacations are to be granted between October 1 of the year covered and April 30 of the following year. The worker and the authority responsible for the execution of this legislation are both to be notified in writing by the employer of the date for the beginning of the vacation, not less than 15 days in advance. By resolution, the authority in charge may authorize the granting of vacations at other times than those indicated above, when the special requirements of some activity demand it. If the employer has not granted a vacation by the end of the time designated, the decree states that the worker may make use of his right to a vacation dating from April 15, but the employer does not thereby become free from liability to a fine of from 20 to 200 pesos a person which the Secretariat of Labor and Welfare or the authority designated by it may impose for failure to grant the vacation provided by the decree. Persons having more than a year of service when the present decree went into effect, who had not had a vacation since April 30, 1944, were to have a vacation before April 30, 1945.

Pay for vacations.—The remuneration for a vacation is to be paid at its beginning. Remuneration is to be understood to include all payments in cash or kind which the worker receives. The pay for each day of vacation is to be arrived at by dividing the amount of the

[1] Derecho del Trabajo (Buenos Aires), February 1945.

monthly salary by 30. For daily, hourly, or piecework pay, the amount corresponding to a normal day of work shall be paid for each workday or holiday in the vacation. In cases where payment is by commission, the salary is to be computed on the basis of the average over the last 6 months. The provisions of this decree do not modify more advantageous provisions which workers may enjoy by other laws or through agreements.

Administration.—The Secretariat of Labor and Welfare (or the authority which represents it in the various jurisdictions) is to supervise compliance with the decree.

Previous legislation and contracts.[2]—The first Argentine legislation providing paid vacations was law No. 11729 of September 21, 1934, which related to commercial employees. Other previous legislation included law No. 12637 of September 10, 1940, relating to employees of private banks; decree No. 28169 of October 17, 1944, concerning agricultural workers; and decree No. 29945 of November 7, 1944, providing paid vacations for managerial and custodial personnel of apartment houses. Sometimes collective agreements, such as that of November 22, 1943, for employees in graphic arts, have provided for paid vacations. The present legislation provides uniform regulations on minimum paid vacations, and places under one central authority the enforcement of compliance with these minimum requirements.

Workers' Vacations in the Soviet Union

IN CONNECTION with the restoration of workers' vacation privileges in the Soviet Union,[3] the Moscow labor daily Trud (organ of the All-Union Central Council of Trade Unions) published on August 11, 1945, a list of questions and answers to acquaint workers with their vacation rights.

Length of vacation.—Every worker, except in certain branches of critical industries where vacations were not to be granted until the end of 1945, is entitled to an annual vacation of 12 workdays, after 11 months of continuous employment in the same enterprise. Workers in dangerous occupations, of which special lists have been made, are entitled to additional leave. The management may also grant extra leave (but not over 12 days) to workers whose workday was longer than 8 hours (during the war, the 11-hour day was usual, 3 hours being paid for at the rate of time and a half). Young workers, 14 to 16 years of age, are entitled to a calendar month of annual vacation. Workers who become ill while on vacation are not required to count the sick days as vacation leave, provided they submit a doctor's certificate.

Pay for vacation period.—Workers are paid for the vacation period. Those in critical industries who cannot take their vacation before the end of 1945 will receive compensation for unused vacation leave. Workers who enroll in technical and higher educational institutions before taking their vacations will be given annual vacation pay and

[2] International Labor Office, Geneva, Legislative Series, 1934, Argentina 3; Derecho del Trabajo, (Buenos Aires), April 1941, December 1943, November 1944, and December 1944.
[3] See Monthly Labor Review, October 1945 (p. 729).

also vacation pay for any time worked in excess of 1 year, at the rate of a day's pay for each month of work.

For each workday of his vacation the worker is paid the average daily earnings he received during the preceding year. To arrive at the average daily earnings, the earnings for the preceding year are divided by 12 and then by 25.6. The "yearly earnings" are considered as including not only straight-time pay but also overtime pay, night-work premiums, bonuses, supplements for length of service, payment for time lost because of machine break-down or absence of fuels or materials, and compensation for temporary disability; they do not include per diem pay and other expenses on field trips, payments from other sources than the wages fund, compensation for unused vacation, payments for work other than the regular work of the worker, or payments in kind.

Food cards and transportation during vacation period.—Because the war destroyed many of the workers' rest homes, and because of transportation difficulties, most of the workers have to take their vacations at home. In order to travel by rail, a worker without a reservation at a rest home must obtain a pass from his district police office; for this purpose a vacation certificate issued by the manager of his working place is usually required. Passes are not required for waterway transportation. Workers who stay at home receive the usual food cards given to nonvacationing workers. Workers who leave their home localities on a vacation, at the time food cards are being distributed, receive the usual food and bread cards for the ensuing month. If the vacation period falls between two months, the worker will receive 5-day bread (or cereal) cards to be used in the next month. Food and bread cards may be exchanged in advance, provided the worker presents a signed card from the place of his employment, stating the dates of his vacation. Only nonperishable foods are obtainable in advance.

Labor Laws and Decisions

Recent Decisions of Interest to Labor[1]

Decisions of National Labor Relations Board

DISCHARGED employee's failure to use USES justifies loss of back pay.—The National Labor Relations Board ruled in *In re Laister-Kauffman Aircraft Corp.* (St. Louis, Mo.) 63 NLRB, No. 209 (October 3, 1945), that an employee had not made every reasonable effort to obtain employment. The employee registered with the U. S. Employment Service and thereby obtained a job, but she voluntarily left the job and did not return to the USES. Instead, she went again and again to the union business agent. This, the Board held, did not constitute a reasonable effort to obtain employment and she was granted back pay only from the time of the discriminatory discharge to the time she left the USES job.

Arbitration

Statute of limitations applied to discharge for fraud.—In the first case of its kind, an arbitrator appointed under a collective-bargaining contract [2] ruled that although a company has the right to discharge or discipline employees for proper cause, including falsification of application records, the company may not do this after the person has been employed for over a year following his falsification. When hired the worker stated on his record that he had never been employed by the company, whereas actually he had been discharged the year before from one of its plants. In stating the theory behind the statute of limitations, the arbitrator pointed out that, with due diligence, the employer could have discovered the fraud within a reasonable length of time. Because of the unusual circumstance, although the employee was reinstated, he was not permitted back pay.

Decisions of National War Labor Board

Reduction in hourly rates refused when job content remains unchanged.—The National War Labor Board refused to permit a reduction in the hourly rates paid by a shipbuilding and ship-repair company [3] which had been engaged in the repair and building of

[1] Prepared in the Office of the Solicitor, Department of Labor. The cases covered in this article represent a selection of the significant decisions believed to be of general interest. No attempt has been made to reflect all recent judicial and administrative developments in the field of labor law nor to indicate the effect of particular decisions in jurisdictions in which contrary results may be reached, based upon local statutory provisions, the existence of local precedents, or a different approach by the courts to the issue presented.

[2] *In re Arbitration between Ford Motor Co. (Highland Park, Mich.) and International Union, United Automobile, Aircraft and Agricultural Implement Workers of America*, May 4, 1945.

[3] *American Car & Foundry Co. (Wilmington, Del.) and Industrial Union of Marine & Shipbuilding Workers of America, Local No. 40, CIO*, NWLB Case No. 111-14340-D, Sept. 27, 1945.

railway passenger cars since 1944 in addition to some of its usual work. The company contended that a reduction in the railway-car rates would be necessary to enable it to maintain its competitive position in the industry, and that it was not asking for a change in the shipbuilding rates. The union contended that the job description was the same for both industries and that the rates on car building and repair work are generally higher than on shipbuilding. The union's position was upheld.

Fair Labor Standards Act

Application of act depends on work of employee and not on that of employer.—In a case in which a bookkeeper was engaged in office work in connection with agency sales made by his employer, and the business of keeping the books was essential to that part of the business, the Supreme Court of Westchester County, N. Y., held that the employer was "in commerce" and the employee was covered by the Fair Labor Standards Act. (*Cassone* v. *Wm. Edgar Jones & Associates*, 57 N. Y. S. (2d) 169.) The employer contended that his business was essentially intrastate in that he sold and repaired pleasure boats for his customers (practically all of whom lived in the State) and occasionally acted as agent for a manufacturer of marine engines outside of the State, and that the business was a retail and service establishment and thus exempt from the act. The Court cited *Kirschbaum* v. *Walling* (317 U. S. 564) as establishing the rule for test of what constituted "engaged in commerce or the production of goods for commerce." Under this test, the bookkeeper was covered by the act.

Time spent in oiling machines, etc., held working time.—The United States District Court for the Western District of Kentucky held that time spent by piece-rate employees before commencing work and during lunch periods in cleaning and oiling machinery, and sorting and attaching work tickets to record sheets (necessary for employer's use in making up pay rolls), is working time for purposes of the minimum wage and overtime provisions of the Fair Labor Standards Act.[4] The court held invalid a collective-bargaining agreement which, in fixing the amount of piecework rates, made an allowance for these preparatory activities. Such an agreement is invalid since employees may not, by collective bargaining, waive rights which would otherwise accrue to them under the act.

Employer's liability and status of home workers not changed by purchasing their tools.—The United States District Court for the Eastern District of New York held that home workers in the needlecraft industry, who were employed on a piece-rate basis and were supplied by the company with the tools and materials necessary to complete the products, were employees within the meaning of the Fair Labor Standards Act.[5] The company therefore, could not terminate its liability under the act by making the home workers purchase their tools from a third person on the theory that this would make them independent contractors. The term "employee" as defined in the act includes those who are suffered or permitted to work, and the law of independent contractors cannot take away the benefits of the act or nullify congressional intent.

[4] *Walling* v. *Frank, et al., d. b. a. Frank Bros.*, Sept. 11, 1945.
[5] *Walling* v. *Wolff & Prinz, d. b. a. Marliss Emblem Co., et al.*, Sept. 24, 1945.

Timber operations conducted for agricultural purposes not within Fair Labor Standards Act.—The District Court of Tennessee held that employees of a farmer, engaged in cutting standing timber on the employer's land and manufacturing it into lumber, using the employer's sawmill, are engaged in agriculture within the meaning of section 13 (a) (6) of the Fair Labor Standards Act, when the work is carried on primarily for clearing the land for agricultural purposes.[6] However, when the employer, using the same mill and the same employees, purchased timber from others, converted it into lumber and sold it along with his own lumber, for distribution in other States, the employees were not engaged in "agriculture" but in interstate commerce, or the production of goods for interstate commerce, and were for that reason covered by the act. A nominal transfer of the business by bookkeeping transactions alone, without the employees' knowledge, does not relieve the true employer of liability under the act.

"Split day" wage plan legal.—The District Court in *Robertson* v. *Alaska Juneau Gold Mining Co.* (61 Fed. Supp. 265) ruled that when an employer who had previously computed wages on a weekly basis agreed to a "split day" plan proposed by the union, whereby part of each daily wage was computed at overtime rate, the contract did not violate the overtime requirements of the Fair Labor Standards Act. The court held that the rate fixed was not fictitious or illusory but was legally established by the employer and agreed upon by the union. The court also pointed out that this case differed from that of *Walling* v. *Helmerich and Payne* (323 U. S. 37), since the employees there involved had to work 80 hours a week to be eligible for overtime pay.

Applicants, working to qualify as trainees, are not "employees."—The District Court of Maine held, in *Walling* v. *Portland Terminal Co.*, (61 Fed. Supp. 345), that trainees of a terminal company seeking to qualify as trainmen were not "employees" within the meaning of the Fair Labor Standards Act, even though the trainees worked with a full crew during their training period of 2 weeks or less.

Bank messenger, employee engaged in interstate commerce.—A person employed by a bank as a combination handy man and messenger whose duties included activities in interstate commerce, according to a district court decision in *Walling* v. *Bank of Waynesboro, Ga.* (61 Fed. Supp. 387), is engaged in interstate commerce as defined by the Fair Labor Standards Act and is entitled to the benefits of the act. The court also ruled that time spent waiting around to be called to deliver messages was "time worked" and must be so treated. Whether or not waiting time is time worked depends on the degree to which the employee "is free to engage in personal activities during periods of idleness when he is subject to call" and also on the number of consecutive hours he is subject to call without having to perform any actual work.

State Court Decisions

Unemployment benefit not lost by refusal to accept job because of union rules.—The Ohio Court of Appeals, in *Chambers* v. *Owens-Ames-Kimball Co.* (62 N. E. (2d) 496), held that an employee who is a union member is not required to accept a job offered by the Unemployment Compensation Bureau, when such acceptance would result in suspen-

[6] *Ridgeway et al.* v. *Warren*, U. S. Dist. Ct., Middle Dist. Tennessee, May 7, 1945.

sion or expulsion from the union. The court in reaching its decision pointed out that unemployment compensation is for the benefit of employees and that the right of working men to bind themselves by rules, constitutions, and bylaws is recognized as valid by State and Federal legislation as well as by the courts. There is a wide variance among classes of labor, union and nonunion, and there must therefore be wide latitude of selection for purposes of classification of claimants under the Unemployment Compensation Act. The court denied the contention that to recognize such a union rule under the circumstances would be class legislation and unconstitutional. Since both unions and unemployment compensation bureaus are for the benefit of the worker, the worker receives no benefit by being forced to accept a job which will result in expulsion from his union and prevent him from obtaining other jobs in the future; nor will it be a burden on the administration of the funds to respect such qualifications, as it will be incumbent on the applicant to prove that he is in such a position that he cannot accept a particular job because of union rules.

Concerted employee action not a "strike."—The Supreme Court of Florida, in a 5 to 4 decision,[7] held that when union bus drivers left their regular routes and blockaded a main thoroughfare by parking their busses in front of a courthouse, stormed the judge's office, and compelled him by threats to release a union member who had been jailed after an assault and battery conviction, they did not violate the Florida union-control law, since such action lacked the elements of a strike. The court pointed out that a strike connotes a movement growing out of problems between the employer and employees relating to wages, hours, or conditions of employment, in the course of which there is a suspension of employment by employees for the purpose of enforcing certain demands against the employer. In this case, although the actions of the union members were unlawful, they did not constitute a strike within the meaning of the Florida statute.

[7] *State of Florida ex rel. Frazier* v. *Cohman*, Oct. 5, 1945.

Wage and Hour Statistics

Earnings on Tugboats and Barges in New York Harbor, January 1945[1]

Summary

THE tugboats, scows, and barges in New York Harbor and the men who keep them running contributed greatly to the efforts that won the war. In this article the wages paid to these men and their working conditions during wartime are described.

In January 1945 there were 11 basic union wage scales in effect for self-propelled boats (tugboats). Union hourly rates ranged, in the various classes of tugs, from $1.10 to $1.42 for captains, the highest-paid job, and from 67 to 89 cents for deckhands, the lowest-paid job. Overtime rates for each occupation were uniformly 1½ times the hourly rates. On non-self-propelled boats (barges and scows) union rates for the only occupation, "captain," an unskilled job, ranged from 43 to 98 cents an hour. Three classes of barges paid 50 cents an hour for overtime; two other classes paid time and a half.

For most of the occupations on tugboats, average straight-time hourly earnings in January 1945 were approximately 5 cents higher than the union rate; for some occupations the difference was considerably greater. The spread between actual earnings and union rates was due to the fact that some workers received double the straight-time rate for hauling ammunition while others worked concurrently in two occupations and received the rates for both jobs simultaneously. Moreover, some workers were paid bonuses for traveling in coastal waters and a small number had 5 cents an hour added to their rates for length of service. On non-self-propelled boats there were no significant differences between union and earned straight-time rates.

Biweekly gross earnings for the period January 16–31, 1945, were relatively high, reflecting the large amount of overtime worked, doubling up of jobs, and the payment of special bonuses. Gross earnings of tugboat captains ranged from $160 to $246 and for deckhands (the lowest-paid occupation) from $74 to $121. In addition to these gross earnings there were certain "extra earnings" for such tasks as handling lines, cleaning boats, piloting, and other special duties. Biweekly gross earnings on barges and scows were lower than on tugs, ranging from $61 to $118.

On all classes of tugs, except railroad tugs, food prepared by a full-time cook was provided for the men. The food allowance, called "grub money," was in addition to wages. Comparable allowances were not given to workers on non-self-propelled boats.

[1] This study was directed and the report prepared by Margaret L. Plunkett. Field work and tabulations were supervised by Lloyd D. Bucher of the Bureau's New York Regional Office.

Scope of Survey

A survey of earnings and working conditions of employees on tugboats and barges operating in the New York Harbor was made by the New York office of the Bureau of Labor Statistics at the special request of the War Shipping Panel of the National War Labor Board. The New York Harbor Carriers surveyed operate in New York Harbor and tributary waters—the Hudson River, the Barge Canal System, Long Island Sound, and adjacent waters. Operators of tugboats, self-propelled lighters, and of non-self-propelled scows, barges, and lighters were included in the study, which relates to the pay-roll period January 16–31, 1945. Trained field representatives of the Bureau obtained the data from company pay rolls and other pertinent records.

Two general types of craft were covered—self-propelled boats, more generally known as tugboats, and non-self-propelled boats, or barges and scows, which are moved by tugs. Several classes of boats were studied within each of the two general types. For convenience these classes, determined mainly by their function, are referred to numerically in the text and tables. Of 11 classes of tugs, each having a distinct and separate set of union wage rates, 7 had a sufficient number of establishments and boats to warrant study. Six of the 8 classes of non-self-propelled boats were studied, the most notable omission being oil barges. The sample studied is shown in table 1.

TABLE 1.—*Sample of Employees, Boats, and Companies Covered in Bureau's Survey, January 1945*

Class of boat	Total number in operation			Sample studied					
				Number			Percent of total		
	Companies	Boats	Employees	Companies	Boats	Employees	Companies	Boats	Employees
Self-propelled boats: [1]									
Class I	21	118	762	11	60	452	52	51	59
Class II	16	37	251	10	20	129	63	54	51
Class III	7	31	353	4	19	232	57	61	66
Class IV	20	78	1,032	13	51	667	65	65	65
Class V	8	32	374	7	26	308	88	81	82
Class VI	4	12	171	4	12	162	100	100	95
Class VII	14	128	2,304	8	79	1,385	57	62	60
Non-self-propelled boats: [2]									
Class I	22	513	513	13	383	383	59	75	75
Class II–A	21	503	503	14	335	335	67	67	67
Class II–B	16	158	158	10	102	102	63	65	65
Class III–A	11	145	145	6	80	80	55	55	55
Class III–B	22	106	106	13	54	54	59	51	51
Class III–C	26	273	273	18	202	202	69	74	74

[1] Classes shown are as follows: Class I, single-crew, self-propelled vessels engaged in transport work and/or steamship shifting; Class II, single-crew, self-propelled vessels other than those engaged in transport and steamship shifting; Class III, 2-crew self-propelled vessels engaged in general harbor towing; Class IV, 24-hour self-propelled vessels engaged in general harbor towing; Class V, 24-hour self-propelled vessels regularly engaged in towing from sand plants; Class VI, 24-hour self-propelled vessels owned by dredging companies and engaged in towing dredged materials; and Class VII, railroad tugs.

In classes I through IV there were various grades of boat depending on engine size. Only the grade "A" vessels were studied, and these had engines either with a single cylinder over 18 inches in diameter, compound cylinders where the diameter of the high pressure cylinder was 14 inches or over, triple expansion engines, or twin-screw engines.

[2] Classes shown are as follows: Class I, coal barges; Class II–A, covered barges; Class II–B, barges with power hoists; Class III–A, harbor deck scows carrying bulk cargo; Class III–B, harbor deck scows carrying liquid cargo; and Class III–C, harbor deck scows chartered to railroads.

In many instances, both self-propelled and non-self-propelled vessels were owned and operated by the same management. About 150 companies (combined into about 90 offices) were operating boats in New York Harbor and vicinity in January 1945. It is common practice for a towboat company and barge company, or other combinations of two or more companies, to operate under the same management, with the same headquarters.

Unionization and Labor Force

This segment of the shipping industry in New York Harbor was found to be highly organized. Most of the establishments had agreements with one or more unions covering all of their employees working on boats. The tugboat companies had agreements with one or more locals of the International Longshoremen's Association, an affiliate of the American Federation of Labor. There were four locals, one each for self-propelled boats, harbor deck scows, covered and hoisting barges, and coal barges. The railroads had agreements with the National Organization of Masters, Mates and Pilots of America, and Local No. 996 and Locals Nos. 933 to 935 of the International Longshoremen's Association.

Occupations on all classes of tugs were fairly standard. All had captains, one or more engineers, one or more mates, firemen or oilers, and deck hands. All but railroad tugs had cooks. Barges had only one relatively unskilled occupation, "captain." These occupations were clear-cut and distinct, and in the same class of boat did not vary appreciably as to title and duty from one establishment to another, or from one boat to another. On the self-propelled boats the deck officers, captains and mates, and the engine-room personnel—engineers and assistant engineers—were required to have a license. The unlicensed employees were those classified as deck hands, firemen, oilers, cooks, and floatmen. While serving in a designated capacity, all these unlicensed men, except cooks, had the opportunity to learn the duties of a licensed officer and, when qualified, to receive a license as second mate or second assistant engineer. The attendants on the non-self-propelled craft were, in the main, unlicensed employees similar to deck hands whose duties required little or no skill.

Factors Affecting Earnings

There were 11 basic union wage scales in effect for self-propelled vessels, depending on various combinations of three factors; (1) the service performed or product towed, (2) the size of the boat, and (3) the number of crews operating the boat. The employees of self-propelled boats worked an 8-hour day, 6 days a week, with time and a half after 8 consecutive hours. Premium pay was also paid for time worked on the seventh day.

Straight-time rates for workers on non-self-propelled vessels varied according to class of boat and product carried or service performed.

The employees on coal barges and harbor deck scows worked 7 days a week and received straight-time pay for the hours between 7 a. m. and 5 p. m., with 1 hour out for lunch. Those on non-self-propelled lighters received straight-time earnings for the hours between 8 a. m. and 5 p. m., 7 days a week, with 1 hour out for lunch. There were various types of overtime pay, depending on whether the boats were loading, towing loaded, towing light, or waiting to be loaded.

Working hours.—Individual establishments had to make various adjustments in order to meet wartime conditions and maintain service. Long hours were characteristic of the industry generally and the vessels were undermanned. For instance, on class IV tugs, the smallest normal complement is 13 members to each crew; often, a crew of 16 is employed. Very few of these vessels were being operated by a full crew during the period studied. Normally, crews on these boats would not receive any overtime pay except for Sunday work, because on regular schedules each man has to stand only one 8-hour watch every 24 hours. Owing to the manpower shortage and the necessity for continuous operation, however, much overtime work was performed.

A practice of considerable significance in affecting earnings was that of "concurrent work." This meant that in the absence of a key crew member, another employee performed the duties of two occupations simultaneously, his own and that of the missing employee, and received the regular rate for each. Not even the management could always give exact information on the amount of concurrent work being performed. Under the tremendous pressure of wartime traffic, it was in the interest of management to keep the boats in operation, and to do this a certain money outlay for wages was required. The distribution of the money often was left to the discretion of the captain in charge of the boat. This practice led to considerable variation in methods of wage payment. In some instances, the men were willing to work additional time at straight-time rates and accept compensatory time off. In other cases, men were paid premium rates for time worked beyond their regular 8-hour day. Variations in hours and method of wage payment, therefore, necessitated special treatment of the data for purposes of tabulation.

In calculating straight-time rates, for instance, the normal workweek could not be used because many of the men worked more 8-hour days than there were actual calendar days in the pay-roll period. Therefore, total "clock days" (8 hours) worked in the period were used as the basis of calculation for straight-time hourly rates. The number of "clock days" worked at straight time varied greatly from one class of boat to another. In class V, for instance, the various occupations averaged from 14 to 17 "clock days," railroad tugs from 12 to almost 14 days, and barges and scows from 12 to over 15 "clock days." Occupations in other classes showed averages ranging from 10 to almost 14 "clock days." Since the maximum number of regular working days in the 2-week period studied was 14, and since not all employees reported regularly for duty, it is apparent that a large number of employees worked many "clock days" in addition to their normal working time.

There were other important factors which explain why, as indicated by the figures in table 3, union rates were lower than the computed straight-time earnings. In several establishments operating

tugs, for instance, one or more of their licensed personnel were paid higher rates than those provided for by the union agreement. In all such cases, it was reported that the employees had formerly worked on a class of boat where their job rate was higher and that they refused to work for less. Another illustration of this type of "overpay" occurred when a company had more captains or other licensed personnel than it could provide with boats at a given time. In such cases the employees were assigned to a lower-paid rating but were paid the job rate of their usual rating. For purposes of computing occupational averages, these persons were classified in the jobs which they were actually performing. Thus, the average earnings for such jobs tended to be somewhat above the established union rates.

Special bonuses and other extras.—Special hazard bonuses, paid on several classes of boat, were also included in straight-time earnings. Such bonuses were paid for traveling along the coast, although this traffic was curtailed as much as possible during the war, and for hauling ammunition, the bonus for the latter amounting to twice the straight-time occupational rate for all time spent in such duties. "Extra earnings" for a variety of duties, such as cleaning boats, handling lines, shifting, night watching, and piloting were not included in either the straight-time or overtime earnings presented in the tables, since they generally related to small proportions of the total workers studied. Flat rates for these duties were stipulated in the union agreements.

Grub money.—On all classes of self-propelled vessels, except railroad tugs, food prepared by a full-time cook was provided. Comparable allowances were not given to workers on non-self-propelled vessels. In most cases, a lump sum was given to the tug captain who bought the food for all. This allowance, called "grub money" by the trade, was paid in addition to wages. The money value of this allowance was not included in calculations of earnings. Table 2 shows the daily amount allowed for food for each man by companies operating various types of boats.

TABLE 2.—*Number of Companies in New York Harbor Paying "Grub Money"* [1]

Class of boat	Number of companies paying daily "grub money" per man of—						
	$0.90	$1.00	$1.05	$1.10	$1.15	$1.20	$0.90 plus "boat money" [2]
All classes	20	2	4	15	2	1	5
Class I	6		[3] 1	[4] 4			
Class II	2			[4] 5	1	1	1
Class III			1	1	1		1
Class IV	5	2	[5] 1	3			2
Class V	5		1				1
Class VI	2			[6] 2			

[1] No "grub money" was paid on railroad tugs or on non-self-propelled boats.
[2] In addition to 90 cents per day per man, an extra allowance of $1.00 or $2.00 "for the boat" was paid to the captain.
[3] Includes one company that paid from $1.01 to $1.06 per day per man.
[4] Includes one company that paid $1.08 per day per man.
[5] One company paid the crew on one of its tugs $1.45 per man per day.
[6] Includes one company that paid $1.06¾ per day per man.

Holidays and vacations.—Provisions for holidays and vacations were uniform for all classes of tugs covered by the union agreement between owners and Local No. 333 of the International Longshoremen's Association. Six holidays—New Year's Day, Decoration Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day—were paid for at the regular straight-time rate, if no work was performed on those days. If employees were obliged to work on those days, they were paid their straight-time rate plus time and a half for a full day, irrespective of the number of hours actually worked. Uniform vacation provisions also prevailed for tugs, employees being allowed 6 days' straight-time pay plus 6 days' grub money after 1 year of continuous service.

Captains on barges and scows did not enjoy such liberal provisions. They were not paid for holidays on which some type of work, such as loading and unloading, did not occur. If these activities were carried on they received their straight-time rates. Work on 6 holidays was compensated on class I and III vessels; class II allowed 12 holidays. Class III was the only class of barge granting a paid vacation, which consisted of 6 days at straight-time pay. Employees on all non-self-propelled boats were also furnished with equipment for their living quarters, consisting of a stove, bed, table, chair, lamp, cooking utensils, and life belt.

Workers' Earnings

UNION HOURLY RATES AND STRAIGHT-TIME AND OVERTIME HOURLY EARNINGS

Union agreements in this industry at the time of survey were very detailed with respect to rates paid on each class of boat. Each class had a flat daily and hourly straight-time rate and a flat hourly overtime rate for each occupation. These rates varied materially from one class to another, but within each class they were uniform except where the product towed was ammunition. Class VI tugs, usually owned by dredging companies, had consistently higher set rates than all other classes except railroad tugs, which paid more to their lowest-grade workers (firemen and oilers, and deckhands). Union straight-time hourly rates ranged, in the various classes of tugs, from $1.10 to $1.42 for captains, the highest-paid job, and from 67 to 89 cents per hour for deckhands, the consistently lowest-paid job (table 3). Firemen and cooks on some classes also received as little as 67 cents. Overtime rates for each occupation were uniformly 1½ times the straight-time rates.

On non-self-propelled boats (barges and scows) the union rates for the only occupation, captain, a comparatively unskilled job, ranged from 43 to 98 cents an hour. On the three lowest-paying types of barges and scows, classes I, III–A, and III–B, the overtime rate was a straight 50 cents an hour, while on the two high-paying types of barge, classes II–A and II–B, overtime was compensated at time and a half. On scows chartered to railroads an overtime rate of $1.37 was paid, which was the rate allowed by the railroads. Each class of non-self-propelled vessel had a regular "Sunday rate" (table 4).

TABLE 3.—*Rates and Earnings in Selected Classes of Tugboats (Self-Propelled Vessels) in New York Harbor, by Occupation, January 16–31, 1945*

Occupation and class of tugboat [1]	Union hourly rates		January 1945				
			Straight-time hourly earnings		Overtime hourly earnings		Average biweekly earnings [2]
	Straight-time	Overtime	Number of workers	Average amount	Number of workers	Average amount	
Class I:							
Captains	$1.10	$1.65	80	$1.12	79	$1.69	$192.10
Engineers	1.06	1.59	64	1.07	63	1.59	209.49
Licensed mates	.89	1.34	28	.89	28	1.38	153.59
Firemen or oilers, when one employed	.72	1.08	10	.72	10	1.08	144.99
Firemen or oilers, when more than one employed	.67	1.01	112	.70	112	1.02	132.53
Deckhands	.67	1.01	107	.70	106	1.02	121.24
Cooks	.67	1.01	51	.67	51	1.01	125.39
Class II:							
Captains	1.15	1.73	25	1.15	25	1.73	169.21
Engineers	1.10	1.65	25	1.10	24	1.65	180.40
Firemen	.70	1.05	28	.70	28	1.02	116.59
Deckhands	.70	1.05	28	.73	28	1.05	111.78
Second deckhands	.67	1.01	8	.67	8	1.01	190.55
Cooks	.67	1.01	15	.68	15	1.01	93.34
Class III:							
Captains	1.15	1.73	40	1.31	40	1.73	246.79
Engineers	1.10	1.65	38	1.24	38	1.66	261.36
Licensed mates	.89	1.34	5	.94	5	1.37	175.75
Firemen or oilers	.70	1.05	54	.78	54	1.05	166.82
Deckhands	.70	1.05	7	.71	7	1.07	100.93
Second deckhands	.67	1.01	69	.79	69	1.01	145.89
Cooks	.67	1.01	19	1.07	16	1.23	113.82
Class IV:							
Captains	1.22	1.83	53	1.38	35	1.93	189.80
Chief engineers	1.18	1.77	52	1.31	41	1.82	165.15
First assistant engineers	1.10	1.65	50	1.23	38	1.72	157.24
Second assistant engineers	1.06	1.59	49	1.18	37	1.63	134.29
First mates	1.10	1.65	50	1.31	36	1.90	168.99
Second mates	1.06	1.59	37	1.25	24	1.72	144.08
Firemen or oilers	.67	1.01	131	.77	83	1.02	83.29
Deckhands	.67	1.01	193	.76	124	1.03	90.20
Cooks	.82	1.23	52	.89	33	1.27	96.40
Class V:							
Captains	1.32	1.98	27	1.40	27	2.05	242.71
Chief engineers	1.27	1.91	27	1.32	26	1.93	186.41
First assistant engineers	1.20	1.80	26	1.25	25	1.83	165.85
Second assistant engineers	1.10	1.65	26	1.17	25	1.69	165.11
First mates	1.20	1.80	27	1.24	24	1.81	207.97
Second mates	1.10	1.65	10	1.15	9	1.76	144.65
Firemen or oilers	.72	1.08	51	.72	48	1.05	96.52
Deckhands	.67	1.01	86	.70	73	1.02	94.75
Cooks	.82	1.23	28	.84	24	1.25	106.52
Class VI:							
Captains	1.42	2.13	11	1.44	7	2.13	162.59
Chief engineers	1.37	2.06	11	1.40	8	2.06	133.98
First assistant engineers	1.29	1.94	13	1.36	10	2.09	119.48
Second assistant engineers	1.18	1.77	9	1.24	5	1.81	103.49
First mates	1.29	1.94	13	1.31	9	1.94	121.65
Second mates	1.18	1.77	5	1.21	2	1.77	112.70
Firemen or oilers	.80	1.20	47	.82	30	1.20	80.86
Deckhands	.75	1.13	46	.76	31	1.13	73.67
Cooks	1.00	1.50	7	1.04	3	1.50	87.78
Class VII:							
Captains	1.27	1.90	201	1.27	182	1.90	160.34
Engineers	1.22	1.83	204	1.22	191	1.84	155.94
Mates	.91	1.36	157	.93	155	1.37	122.63
Firemen and oilers	.96	1.44	413	.96	387	1.45	121.11
Deckhands	.89	1.33	201	.89	191	1.34	115.21
Floatmen	.89	1.33	192	.89	162	1.33	102.99
Cooks	[3]	[3]	17	.88	16	1.30	111.97

[1] For description of various classes of self-propelled tugboats, see footnote 1, table 1.
[2] Includes only straight-time and overtime earnings for 2-week period. Does not include earnings for special duties such as cleaning boat, handling lines, piloting fees, etc. The workers represented by figures on gross weekly earnings are identical with those reporting straight-time hourly earnings.
[3] Not reported.

TABLE 4.—*Rates and Earnings of Captains on Six Classes of Barges and Scows (Non-Self-Propelled Vessels) in New York Harbor, January 16–31, 1945*

Class of boat [1]	Union rates			January 1945						
				Straight-time hourly earnings		Overtime hourly earnings		Sunday earnings		Average biweekly earnings
	Straight time, per hour	Overtime, per hour	Sunday rate, per day	Number of workers	Average amount	Number of workers	Average amount	Number of workers	Average amount	
Class I	$0.45	$0.50	$4.00	388	$0.45	284	$0.50	157	$4.00	$73.85
Class II-A	.91	1.37	[2] 10.95 7.30	335	.91	220	1.37	[3] 67 68	[3] 10.95 7.30	113.32
Class II-B	.98	1.46	[3] 11.70 7.80	101	.98	61	1.46	[3] 23 31	[3] 11.70 7.80	118.43
Class III-A	.43	.50	3.83	88	.44	40	.52	25	3.98	67.07
Class III-B	.46	.50	4.17	54	.46	5 [3] 5	.50	7	4.17	61.09
Class III-C	.54	1.37	4.83	194	.54	50 [3] 45	1.37	28	4.83	79.06

[1] For description of non-self-propelled vessels, see footnote 2, table 1.
[2] The largest rate in all cases is the Sunday rate for loading or unloading. The smallest rate is for waiting and towing.
[3] These workers received overtime payments for which no hours could be secured.

On tugboats average straight-time hourly earnings were generally higher than union rates because some workers were paid double the straight-time rate for hauling ammunition, others worked concurrently in two occupations, or received bonuses for traveling in coastal waters. Some workers received an extra 5 cents an hour over the union rate for length of service. Since such additional earnings were not common to all employees in the various occupations, the straight-time earnings averaged out to within 5 cents an hour above the union rate in most of the occupations studied.

In some classes of boats, however, the difference between straight-time earnings and union rates was considerably greater. For example, earnings in all occupations on class III tugboats were higher than the union rates; the difference in 5 of the 7 occupations was more than 5 cents. This wide spread reflected the premium earnings of workers operating class III tugs that did a great deal of ammunition towing. Class IV tugs also showed substantial differences, ranging from 7 cents for cooks to 21 cents for first mates. Classes I and VII showed the smallest variations from union rates, the railroad tugs particularly reflecting the more stabilized situation as to working conditions and wage practices characteristic of the parent industry. On the non-self-propelled boats there were no significant differences between union rates and straight-time earnings.

Overtime rates showed substantial differences between the regular overtime rate and the earned rate only on class IV tugs. Some variations appeared in class V, but their magnitude was considerably less than for class IV. On the non-self-propelled boats, the union rates and earnings again were identical.

BIWEEKLY GROSS EARNINGS

Far more significant than hourly rates and earnings as an indication of income of boat and bargemen are biweekly gross earnings. Analysis of gross biweekly earnings indicates that a large amount of overtime

was worked on almost all types of boats. In class I, for instance, the average overtime worked for all occupations was 67 hours in the 2-week period, and all but 3 of the more than 400 scheduled workers contributed to this average. In class II, employees in all occupations worked an average of 40 or more overtime hours, while in class V, 3 of the 5 occupations averaged more than 65 overtime hours. Overtime in the remaining classes averaged less than 25 hours in the period covered.

Other factors contributing to high gross earnings were the doubling up of jobs performed on a number of days in the period, and the special bonuses already mentioned. Gross earnings of captains ranged from $160 on railroad tugs to $246 on class III tugs for the 2-week period. Engineers also had high gross earnings, ranging from $134 on class VI boats to $261 on class III boats. For deckhands, gross biweekly earnings ranged from about $74 on class VI to $121 on class I tugs.

In addition to these gross earnings there were certain "extra earnings" for such tasks as handling lines, cleaning boats, piloting, and other special duties which were not included in the averages because they were earned by relatively few individuals and their inclusion would have distorted the general averages. In some cases, particularly where "pilot" fees were involved, these "extra" earnings were considerable.

Biweekly gross earnings on barges and scows were very much less than on tugs, ranging from $61 to $118. These figures include Sunday earnings. On these vessels there was a variety of additional types of "extra earnings" such as payments for periods of watching, waiting, and towing, as well as for cleaning boats.[2]

Trend of Factory Earnings, 1939 to September 1945

THE published average earnings of factory workers are summarized in the accompanying table for selected months from January 1939 to September 1945.[3] The earnings shown in this table are on a gross basis (i. e., before deductions for social security, income and victory taxes, bond purchases, etc.).

Weekly earnings in all manufacturing averaged $40.88 in September 1945—76.3 percent above the average in January 1939 and 53.5 percent above January 1941. Weekly pay for September of this year was 12 percent below that of September a year ago, as a result of reductions in both hourly pay and working hours. However, the average earnings of factory workers were still higher than before the war, as a result of such wartime factors as changing composition of the labor force within plants, shifts in the distribution of workers among plants and among industries, as well as wage-rate increases.

[2] A forthcoming bulletin will contain a description of wage factors in connection with individual classes of vessels.

[3] Compare Trends in Factory Wages, 1939–43, in Monthly Labor Review, November 1943 (pp. 869–884), especially table 4 (p. 879). For detailed data regarding weekly earnings, see Detailed Reports for Industrial and Business Employment, September 1945, table 6 (p. 1264), in this issue.

Gross hourly earnings in all manufacturing averaged 98.8 cents in September 1945; this was 56.3 percent above the average in January 1939, 44.7 percent above January 1941, and 10.6 percent above October 1942.

Straight-time average hourly earnings, as shown in columns 7 to 9, are weighted by man-hours of employment in the major divisions of manufacturing for January 1941. These earnings are estimated to exclude premium pay at time and a half for work in excess of 40 hours. However, the effect of extra pay for work on supplementary shifts and on holidays is included. For this reason, straight-time earnings data are not presented for August 1945 when the hourly earnings were inflated by premium payments for work on the double holiday, celebrating the Japanese surrender. Because the Bureau believes that earnings for September may have been inflated by premium pay for work on Labor Day, the September figures are withheld from publication pending availability of October data, at which time it will be determined whether or not straight-time earnings for September will be released.

Earnings of Factory Workers in Selected Months, 1939 to September 1945

Month and year	Average weekly earnings			Average hourly earnings			Estimated straight-time average hourly earnings [1] weighted by January 1941 employment		
	All manufacturing (1)	Durable goods (2)	Nondurable goods (3)	All manufacturing (4)	Durable goods (5)	Nondurable goods (6)	All manufacturing (7)	Durable goods (8)	Nondurable goods (9)
1939: January	$23.19	$25.33	$21.57	$0.632	$0.696	$0.583	$0.641	$0.702	$0.575
1940: January	24.56	27.39	22.01	.655	.717	.598	.652	.708	.589
1941: January	26.64	30.48	22.75	.683	.749	.610	.664	.722	.601
1942: January	33.40	38.98	26.97	.801	.890	.688	.751	.826	.668
July	36.43	42.51	28.94	.856	.949	.725	.783	.863	.696
October	38.89	45.31	30.66	.893	.990	.751	.807	.888	.718
1943: January	40.62	46.68	32.10	.919	1.017	.768	.819	.905	.726
April	42.48	48.67	33.58	.944	1.040	.790	.833	.916	.742
July	42.76	48.76	34.01	.963	1.060	.806	.850	.939	.753
October	44.86	51.26	35.18	.988	1.086	.824	.863	.950	.768
December	44.58	50.50	35.61	.995	1.093	.832	.873	.962	.775
1944: January	45.29	51.21	36.03	1.002	1.099	.838	.877	.965	.780
April	45.55	51.67	36.46	1.013	1.110	.850	.889	.976	.794
July	45.43	51.07	37.05	1.018	1.116	.862	.901	.993	.802
October	46.94	53.18	37.97	1.031	1.129	.878	.908	.991	.817
December	47.44	53.68	38.39	1.040	1.140	.883	.912	.997	.820
1945: January	47.50	53.54	38.66	1.046	1.144	.891	.920	1.005	.827
April	47.12	52.90	38.80	1.044	1.138	.899	.925	1.007	.836
July	45.45	50.66	38.59	1.033	1.127	.902	.933	1.017	.842
August	41.75	45.79	36.62	1.025	1.113	.909	[3]	[3]	[3]
September [2]	40.88	43.89	37.85	.988	1.073	.904	[4]	[4]	[4]

[1] Average hourly earnings, excluding premium pay for overtime, weighted by man-hours of employment in the major divisions of the manufacturing industry for January 1941.

[2] Preliminary.

[3] Straight-time average hourly earnings will not be available for August 1945 inasmuch as the adjustment factor used to estimate these figures is not applicable when the pay-roll period includes holidays.

[4] Not available.

Wage and Hour Regulation

Puerto Rico Wage Orders Under Fair Labor Standards Act[1]

MINIMUM wage rates were recently established for workers in 11 industry groups in Puerto Rico under the terms of orders promulgated by the Administrator of the Fair Labor Standards Act of 1938. Rates ranging from 15 cents to 40 cents an hour were prescribed to become effective on October 24, 1945, as shown in the accompanying table. Employees covered by the wage rates established are those who are engaged in commerce or in the production of goods for commerce in the Puerto Rican industries for which the rates were fixed.

Wage Orders Under Fair Labor Standards Act, for Puerto Rican Workers, Effective October 24, 1945

Industry group	Minimum hourly wage rate
	Cents
Chemical, petroleum, and related products industries:	
General division	40
Drugs, medicines, and toilet-preparations division	32
Communications, utilities, and miscellaneous transportation industries	40
Construction, business-service, motion-picture, and miscellaneous industries:	
Motion-picture, business-service, and miscellaneous industries division	40
Construction division	32
Foods, beverages, and related products industries:	
Liquor and wine division	40
Malt-beverage, water, and soft-drinks division	30
Candy, confectionery, and related products division	30
Candied-fruits division	30
Bakery-products, cocoa, coffee, and jelly division	20
Fruit and nut packing, fruit curing, and allied activities division	18
Miscellaneous division	30
Leather, textile, rubber, straw, and related products industries:	
Hide, skin, and leather division	20
Leather and skin products division	30
Decorated leather-button division:	
Hand-painting or similar decorating	20
All other operations	28
Cotton ginning and compressing division	25
Textile and textile products division	25
Hand-loomed textile division:	
Hand-sewing and hand-decorating operations	15
Hand-looming or other operations, except hand-sewing and hand-decorating	24
Raffia, straw, and sisal handbag division:	
Hand-weaving, hand-braiding, hand-sewing, hand-decorating, or similar hand operations	15
All other operations	24
Hand-woven basket and related products division:	
Hand-weaving, hand-braiding, hand-sewing, hand-decorating, or similar hand operations	15
All other operations	20
Rubber products division	40
Miscellaneous division	25

[1] Information is from Federal Register, October 24, 1945 (p. 13190), which also furnishes the definitions of industries and divisions covered.

Wage Orders Under Fair Labor Standards Act, for Puerto Rican Workers, Effective October 24, 1945—Continued

Industry group	Minimum hourly wage rate
	Cents
Lumber and wood products industries:	
Lumber, millwork, and furniture division	32
Woodenware division	28
Match division	28
Button division:	
Hand-painting or similar decoration	20
All other operations, including cutting, machine-operating, stamping, sanding, buffing, polishing, varnishing, carding, examining, packing, and shipping	28
Basket and wovenware division:	
Hand-weaving, hand-braiding, hand-decorating, and similar operations	15
All other operations, including designing, cutting, examining, packing, and shipping	20
Miscellaneous division	25
Metal, plastics, machinery, instrument, transportation-equipment, and allied industries:	
Foundry and machine-shop products division	35
Gem-stone division	40
Industrial jewel division	30
Button, bead, and costume novelty-jewelry division	28
Rosary and bead stringing division:	
Assembling of rosaries and stringing of beads other than by machine	20
All other operations	28
Miscellaneous division	35
Needlework: [1]	
Hand-sewing operations:	
Glove division:	
Woven and knitted fabric gloves:	
Hand-sewing operations	18
Machine operating or any operations known as cutting, laying-off, sizing, banding, and boxing	35
All other operations, except hand sewing	24
Leather gloves:	
Hand-sewing operations	22
Machine operating or any operations known as cutting, laying-off, sizing, banding, and boxing	40
All other operations, except hand sewing	24
Paper, paper products, printing, publishing, and related industries:	
Paper-board division	25
Building-board division	30
Publishing, printing of newspapers and periodicals, and allied graphic arts division	35
Commercial printing and converted paper products division	28
Miscellaneous division	30
Stone, clay, glass, and related products industries:	
Sand and gravel division	30
Stone quarrying and crushing division	30
Lime and lime products division	30
Concrete construction products division	35
Clay and clay products division	25
Glass and glass products division	35
Glass button and bead division	28
Pearl button division	35
Miscellaneous division	35
Wholesaling, warehousing, and other distribution industries	35

[1] For rates in effect earlier and for rates in other branches of the needlework industry, see Monthly Labor Review for January 1945 (p. 162).

Prices, and Cost and Standards of Living

Prices in the Third Quarter of 1945

Summary

COMMODITY prices, on the average, both at primary-market (wholesale) and consumer levels, dropped during the third quarter of 1945, almost entirely because of lower prices for agricultural commodities and foods. Prices for nonagricultural commodities were generally higher, continuing the rise of earlier months, but the sharp drop in agricultural commodity prices was sufficient to lower the wholesale price index by 0.8 percent and the consumers' price index by 0.1 percent. Market prices for farm products declined 4.7 percent from June to September, while foods fell 2.4 percent at wholesale and 1.2 percent at retail. Major advances occurred in prices at all levels for textiles and clothing, and for building materials. Percentage changes in retail and wholesale prices for specified periods are shown in table 1.

TABLE 1.—*Percent of Change in Retail and Wholesale Prices in Specified Periods*

To September 1945 from—	Percent of change in—		
	Retail prices of living essentials	Wholesale prices of—	
		All commodities	All commodities, except farm products and foods
June 1945: 3 months ago	−0.1	−0.8	+0.2
September 1944: Year ago	+1.9	+1.2	+1.2
May 1943: Hold-the-line order [1]	+3.0	+1.1	+3.2
May 1942: OPA's General Maximum Price Regulation	+11.1	+6.5	+4.3
January 1941: "Little Steel" decision	+27.9	+30.2	+18.4
August 1939 to August 1945	+31.1	+40.9	+24.7
July 1914 to November 1918	+61.8	+102.5	+97.7

[1] The President's hold-the-line order was issued on April 8, 1943. The peak of the price rise which had led to this order was reached in May which is, therefore, used for this comparison.

A comparison of price movements during the 6 years of World War II and the 4 years of World War I indicates that price-control measures were generally successful in restraining prices during the war just ended. Average primary-market prices rose 41 percent from August 1939 to August 1945, compared with an increase of 103 percent during the shorter period, July 1914 to November 1918. Consumers' prices rose 31 percent and 62 percent during the same periods. In World

War II, price advances were concentrated in agricultural commodities and closely related products such as foods, while during World War I, in contrast, industrial materials advanced almost as much as farm products. Comparable rises for all commodities other than farm products and foods were 98 percent during World War I and 25 percent during World War II.

No new market trends appeared during the third quarter of 1945. Following the Japanese acceptance of the Potsdam surrender terms in mid-August, however, there was an acceleration of the movements which had begun with the German surrender in May. Industrial production dropped rapidly in August and September, bringing the decline from June to September to 22 percent. With cut-backs of more than 24 billion dollars in war production, durable-goods production dropped 32 percent.

The rapid decline in production indexes, however, was an exaggeration of the immediate effect of peace on the economy. Retail sales recovered rapidly from the VJ-day slump, and continued at a high rate through the end of the quarter, with consumers continuing their heavy purchases of all available goods. Revised estimates of national income and product for 1945, prepared by the U. S. Department of Commerce, indicated that gross national product for the year would be only 2 percent below the high 1944 rate. Income payments during the second half of the year were expected to decline less than 10 percent from the high level of the first 6 months of 1945.

Nonagricultural employment dropped 2,000,000 from August to September, but many of those out of employment withdrew from the labor force so that the number unemployed rose only 820,000 to 1,650,000 persons in September. Employment trends late in September indicated that the low had been reached and that employment could be expected to increase from that point onward, although unemployment would continue to rise with military discharges, reaching a peak in the spring of 1946.

The Government's reconversion policy was formalized in the Executive Order of August 18. Under this order War Production Board controls over production and distribution were relaxed rapidly and by the end of September restrictions remained on only a small number of commodities. Price controls generally were maintained. The Office of Price Administration elaborated its postwar program, under Office of Economic Stabilization Directive No. 68, issued July 25. Major elements of the OPA program were (1) the "decontrol" of prices on a selective basis as soon as lifting of controls could be effected without a price rise or on commodities of minor importance in the cost of living or business costs, (2) a "cost absorption" pricing policy for reconversion goods, and (3) a 5-point program to prevent inflationary price rises.

Continued stabilization of prices assumed added importance as widespread demands were made, by labor, for higher wages to compensate for the loss of overtime pay and the high cost of living. Under the August 18 order, voluntary wage increases were permitted, provided compensatory price rises were not required. Those which would necessitate price increases were subject to approval of the Director of Economic Stabilization.

Prices of Consumer Goods

Average retail costs of consumer goods and services declined fractionally between June and September 1945. Prices reached a wartime peak in July, 31 percent above August 1939, and then declined during August and September, because of lower prices for foods. Most other commodity groups advanced steadily during the quarter. In primary markets, farm products and foods declined 4.7 percent and 2.4 percent, respectively, while hides and leather products, textile products, and housefurnishings were higher.

TABLE 2.—*Percent of Change in Consumers' Prices and in Prices of Consumer Goods in Primary Markets in Specified Periods* [1]

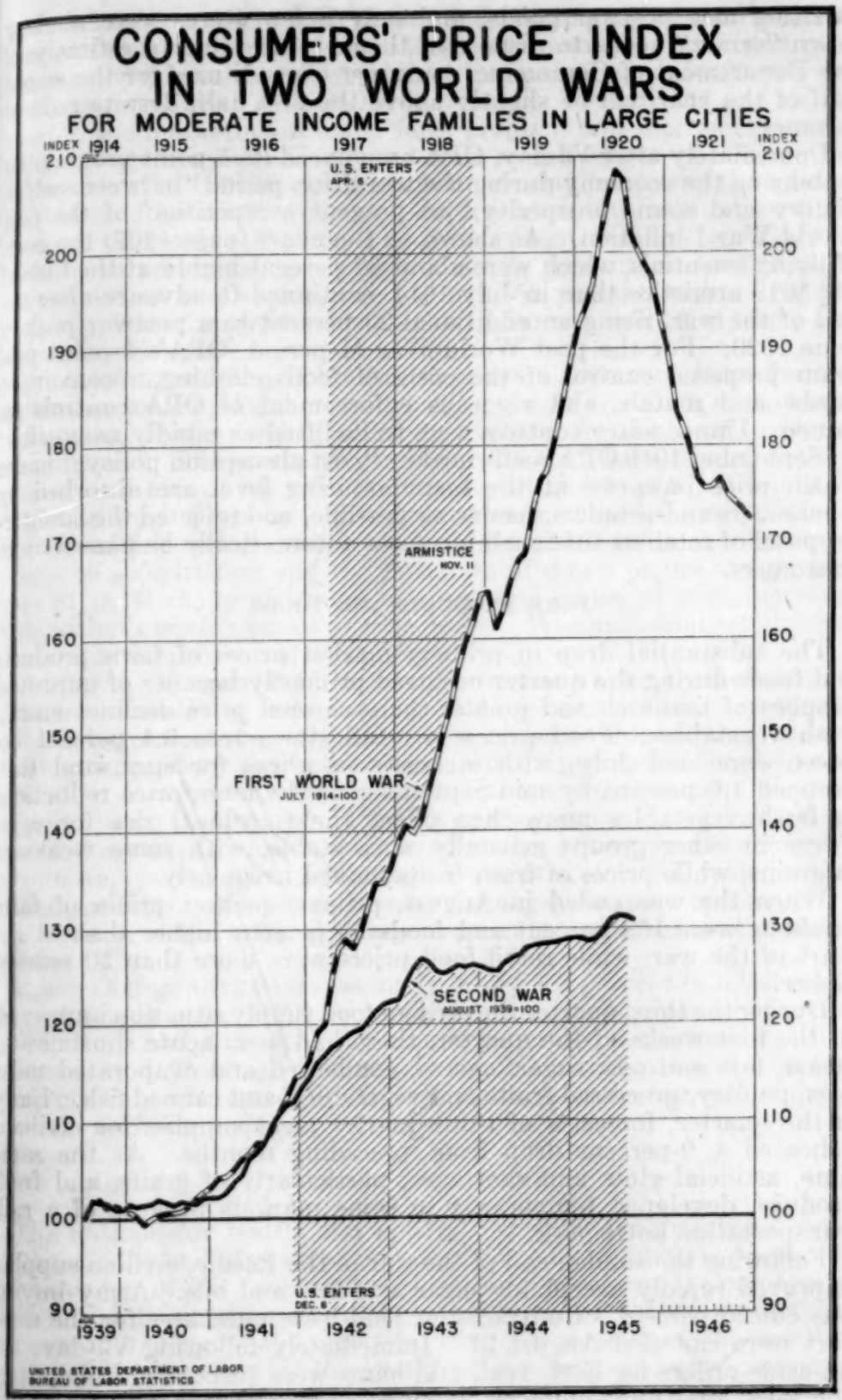
Commodity Group	Percent of change—					
	In last quarter, June 1945 to Sept. 1945	In last year, Sept. 1944 to Sept. 1945	From hold-the-line order,[2] May 1943 to Sept. 1945	From OPA's Gen. Max. Price Reg., May 1942 to Sept. 1945	World War II, Aug. 1939 to Aug. 1945	World War I, July 1914 to Nov. 1918
Consumers' prices: All items	−0.1	+1.9	+3.0	+11.1	+31.1	+61.8
Food	−1.2	+1.8	−2.5	+14.6	+50.7	+79.7
Clothing	+1.9	+4.8	+15.9	+17.4	+46.0	+106.6
Rent	0	+.1	+.3	−1.5	+3.8	+4.9
Fuel, electricity, and ice	+.6	+.8	+2.9	+5.5	+14.3	+43.3
Gas and electricity	0	−.6	−.9	−1.4	−3.8	
Other fuels and ice	+1.0	+1.9	+5.9	+11.3	+32.1	
Housefurnishings	+.7	+4.3	+17.3	+20.1	+45.1	+94.9
Miscellaneous	+.5	+1.8	+8.1	+12.4	+24.0	+57.9
Consumer goods (primary-market prices):						
Farm products	−4.7	+1.3	−1.1	+19.1	+108.0	+110.5
Foods	−2.4	+.7	−5.1	+6.1	+58.3	+104.5
Hides and leather products	+.6	+2.3	+.8	−.1	+27.3	+88.8
Textile products	+.5	+.9	+2.8	+2.1	+46.9	+157.9
Housefurnishings	+.1	+.2	+1.9	+1.7	+22.1	+75.0

[1] In comparing retail and primary-market price movements the following differences between the consumers' prices and primary-market price indexes must be noted: The consumers' price index includes only selected goods and services purchased by wage earners and clerical workers, and reflects the effect of disappearance of lower-priced articles. The primary-market indexes represent all commodities, and are based on goods with unchanged specifications.

[2] The President's hold-the-line order was issued April 8, 1943. The peak of the price rise which had led to this order was reached in May, which is, therefore, used for this comparison.

Prices of consumer goods were not affected noticeably during the quarter by the reduction in the war program and relaxation of Government controls at the end of the war. Gasoline rationing was lifted immediately after the peace announcement and high octane gas returned to the civilian market. Coal prices were higher, and supplies were threatened by strikes. As supplies of foods improved materially, rationing of some foods was relaxed, but clothing and durable goods were still scarce. Although production of some durable goods was resumed and manufacturers' shipments of such articles as clocks and photographic equipment increased, for the most part these goods had not reached retail stores by the end of the quarter.

Department-store sales during the quarter remained above those of 1944, although seasonally adjusted sales in August and September were about 8 percent lower than the high level of July. There were only occasional reports that customers were holding off purchases,


CONSUMERS' PRICE INDEX
IN TWO WORLD WARS
FOR MODERATE INCOME FAMILIES IN LARGE CITIES
INDEX
1914
1915
1916
1917
1918
1919
1920
1921
INDEX
210
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130
120
110
100
90
U.S. ENTERS
APR. 6
ARMISTICE
NOV. 11
FIRST WORLD WAR
JULY 1914=100
SECOND WAR
AUGUST 1939=100
U.S. ENTERS
DEC. 6
1939
1940
1941
1942
1943
1944
1945
1946
UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

awaiting new postwar goods, and only a few stores were marking down "ersatz" goods to dispose of them. According to estimates of the Department of Commerce, consumer expenditures for the second half of the year will be slightly above the first half, despite reduced incomes.

Immediately after VJ-day, OPA announced its 5-point program for stabilizing the economy during the transition period "between sudden victory and sound prosperity," to prevent a repetition of the post World War I inflation. As shown on the chart (page 1207) the cost-of-living essentials, which were about 62 percent higher at the time of the 1918 armistice than in July 1914, continued to advance after the end of the war, rising an additional 29 percent to a postwar peak in June 1920. For the post World War II period, OPA's 5-point program proposed control of the costs of food, clothing, reconversion goods, and rentals, and vigorous enforcement of OPA controls retained. Unnecessary controls were to be lifted as rapidly as possible. In September 1945 OPA reaffirmed its "cost absorption policy," under which price increases at the manufacturing level are absorbed by wholesalers and retailers insofar as possible, and rejected the counter-proposal of retailers that such increases automatically be passed on to consumers.

FARM PRODUCTS AND FOODS

The substantial drop in primary-market prices of farm products and foods during the quarter occurred primarily because of improved supplies of livestock and greater-than-seasonal price declines among fresh vegetables. Food prices in retail stores rose 0.4 percent between June and July, with increases in prices for eggs, and then dropped 1.6 percent by mid-September as the large price reductions in fresh vegetables more than offset the continued rise for eggs. Prices in other groups generally were stable, with some weakness in grains, while prices of fresh fruits moved irregularly.

When the war ended in August, primary-market prices of farm products were 108 percent and foods 58 percent higher than at the start of the war, while retail food prices were more than 50 percent higher.

During the third quarter the civilian food supply situation improved. In the first weeks of the quarter, there had been acute shortages of meats, fats and oils, sugar, cheese, condensed and evaporated milk, eggs, poultry, processed fruits and vegetables, and canned fish. Early in the quarter, forecasts of third-quarter meat supplies for civilians indicated a 9-percent drop from preceding months. At the same time, artificial gluts and shortages, particularly of grains and fresh produce, developed temporarily in some markets because of a rail-transportation bottleneck.

Following the sudden end of the war in the Pacific, civilian supplies improved rapidly except for sugar and fats and oils. Army buying was cut 20 percent. Contracts for lend-lease purchases for the most part were canceled August 21. Immediately following VJ-day, the set-aside orders for beef, veal, and hams were suspended indefinitely and pork loins and shoulders, poultry, and butter were added to the list shortly thereafter. Set-asides for other foods were reduced. On August 26 substantial increases were made in slaughter quotas of operators not under Federal inspection, and by September 8 all con-

trols with respect to livestock quotas and distribution were terminated. Canned fruits and vegetables, cheese, and canned evaporated milk were removed from rationing, while ration-point values for butter and meats were reduced as supplies increased. Toward the end of the quarter, the marketing of many farm products was increasing seasonally and some surpluses developed from record crops.

The extent of the improvement in meat supplies during the quarter is illustrated by a survey in mid-September in 56 large cities which revealed that only 14 percent of independent retailers were out of beef steaks and roasts as compared to 73 percent in June, and 48 percent out of veal as compared to over 86 percent in June. However, supplies of pork loins, hams, and bacon as well as of sugar and lard were still scarce.

Prices of livestock and poultry declined 4.4 percent from June to September as supplies increased. All types of livestock except hogs participated in the decline, which was greater for the lower grades in less demand. The severe shortage of hogs continued throughout the quarter and almost all sales were made at the $13.75 per hundredweight ceiling. Lamb prices decreased more than seasonally, following the withdrawal of subsidy payments of 95 cents per hundredweight to slaughterers and the initiation of direct payments, ranging from $1 to $3.15, to producers of sheep and lambs to meet increased costs without raising prices to consumers. Wholesale and retail prices of meats remained stable at ceilings.

During the quarter, fresh vegetables declined more than seasonally at both wholesale and retail levels. Ceilings on green beans, potatoes, and cabbage were suspended because of large crops. Declines for potatoes in primary markets ranged from 43 percent in Boston to 33 percent in Portland, Oreg., and retail prices dropped more than 30 percent during the quarter. Primary-market prices for western apples moved downward, while quotations for the extremely short crop of eastern apples and average retail prices moved upward, under higher interim ceilings. Wholesale prices of oranges declined contraseasonally because of the unusually large crop and a preponderance of small-size fruit.

Prices of eggs advanced seasonally, rising 7.3 percent in retail stores as permitted under OPA regulations, while primary-market prices rose in July and August, but declined generally in September. The weakness in September, particularly for the lower grades, was caused by Army cancellation of egg-drying contracts and improved supplies of meats and poultry.

TEXTILES AND APPAREL

The outlook for textile and apparel markets was directly affected by the sudden end of the war in August, but developments during the third quarter of 1945 were affected chiefly by earlier developments in supply and labor situations. Average prices of textile products in primary markets rose 0.5 percent during the quarter as the result of ceiling adjustments under the Bankhead amendment to the Stabilization Extension Act of 1944. Average retail costs of clothing continued their uninterrupted advance of the last 2 years as the result of the disappearance of low-cost goods, with an increase of 1.9 percent during the quarter.

The ending of the war considerably improved the civilian-textile outlook for the latter part of 1945 and early 1946. The War Production Board estimated that supplies of cotton textiles for the fourth quarter would be a third larger than in the third quarter. Increased production, however, was delayed by the slow return of textile workers from better-paying war jobs, and the higher labor requirements per unit of civilian production than for military production. Mills also experienced difficulty in adjusting their operations to OPA's Maximum Average Price Plan. These factors, plus the time needed from the finishing of the fabric to the completion of garments and their ultimate delivery to retailers, indicated that there would be a considerable period before adequate supplies of finished apparel would be available to consumers.

"Spot quotations" for 15/16 staple cotton in 10 southern markets declined slightly less than 1 percent during the quarter. The lowest point was reached in August as a result of the initial and temporary reaction to cancellations of military orders and uncertainties about reconversion. Buyers' renewed interest during September accounted for some recovery.

As a result of adjustments under the Bankhead amendment, the cotton goods subgroup of the Bureau's primary-market price index rose more than 1 percent during the quarter. Between August 31 and September 25, OPA increased ceiling prices of cotton yarns, sheeting, towels, print cloth and several other important categories of cotton fabrics in the grey. Advances ranged from 1.6 percent for narrow print cloth of 64 x 56 thread count to 9.2 percent for sheets.

Manufacturers' prices for men's cotton apparel remained virtually unchanged although the quantity reaching retail stores was limited. Average prices to consumers were higher with supplies far short of demand, although an increased amount of garments ticketed with the retail price by manufacturers, and produced under the joint OPA-WPB program to restore low-cost clothing to the market, was reported available.

The prices of domestic wool and of woolen fabrics remained unchanged as the Government continued its policy of supporting wool prices through the purchase of the entire 1945 clip. Foreign wools likewise remained generally unchanged at ceiling prices lower than for domestic wool. Raw shearlings continued to be sought for the production of women's fur coats and slippers, and the market price for the better grades advanced 3 percent.

The cost to consumers for wool apparel was generally higher than in the second quarter and retail stocks were at the lowest level of the war period. Men's suits, topcoats, and overcoats, and women's fur coats, fur-trimmed and untrimmed coats and suits increased in cost as merchants were able to stock only the higher price lines. Large Government requirements early in the year had limited the quantity of fabrics available to manufacturers, and the material obtainable usually was higher quality and higher priced.

Retail prices of adults' footwear remained relatively stable, but the cost of children's shoes to moderate-income families advanced approximately 1.5 percent as a result of relaxation of production controls by the WPB. Limited quantities of Government surplus goods, such as aviator jackets, blankets, and Wave suits with insignia removed, were available.

HOUSEFURNISHINGS

Retail costs of house furnishings fluctuated during the third quarter, reflecting the instability of the market, but the net movement was upward. Retail costs dropped 0.3 percent in July and then advanced in August and September to a level 0.7 percent above that of June. During the war retail costs of housefurnishings advanced about 45 percent, whereas during World War I they nearly doubled.

Blankets, because of increases in size over those offered last year, advanced in cost to consumers in nearly every city. In primary markets, sheets and pillowcases advanced more than 9 percent as the result of higher OPA ceilings under the Bankhead amendment, but the change was not yet reflected at retail. The cost of wool floor coverings rose 1.7 percent, living-room suites 1.4 percent, and bedroom suites 0.4 percent.

The lack of merchandise continued to overshadow price changes in the durable-goods field. Relaxation of WPB controls with the end of the war had not yet been reflected in noticeable easing of supplies. Shortages of materials and labor and pricing problems tended to slow production.

Restrictions on many durable goods, such as radios, automobiles, metal furniture, stoves, electric irons, luggage, sewing machines, and electric fans were relaxed or lifted during the quarter. Most of these items, however, were not expected to reach retail markets in volume before early 1946.

For the most part, selling prices of reconversion goods had not been announced by the end of the quarter. For washing machines and ironers, OPA granted manufacturers a 7.7-percent increase over 1941 ceilings, to be absorbed by wholesalers and retailers.

Dining-room furniture and wool rugs in all price brackets continued scarce, but retailers in several cities reported some easing of the supply situation, especially for living-room and bedroom furniture. According to the Federal Reserve Board, the value of stocks on hand in department stores at the end of August 1945 was 19 percent higher than a year ago for furniture and bedding, and 15 percent for china and glassware but 13 percent below a year ago for major household appliances.

In September, WPB reported that the dollar value of shipments of wood furniture was above the 1944 level, but trade comment indicated that the physical volume of units produced reached its wartime low in August with the rise by the end of the year not expected to exceed 10 percent. Because of increased manufacturing costs and public demand for higher-priced, better-grade merchandise, production of lower-cost items was greatly reduced during the war years. Many firms reported orders several times greater than monthly production.

FUELS AND UTILITIES

During the third quarter of 1945, composite average prices of fuels and utilities moved upward 0.2 percent in primary markets and 0.6 percent in consumer markets. In these industries more than in most others, optimism regarding production and supply problems immediately following VJ-day proved short-lived.

Substantial changes took place in the prices, production, and distribution of petroleum and petroleum products. Rationing of gasoline and fuel oil was ended promptly after VJ-day. In the East Coast area, price-ceiling reductions for major petroleum products, effective September 1 at the wholesale level and September 17 at the consumer level, canceled the balance of the price increases granted during the war to help defray the extra costs of transportation when rail shipments replaced tanker shipments to the area.

Simultaneously, with approval of higher octane ratings for regular and premium grades of gasoline, a Nation-wide advance of one-eighth cent per gallon was allowed by OPA in refinery prices for gasoline, canceling a like reduction when octane ratings were lowered in 1944. Neither the 1944 reduction nor the recent increase affected retail prices. The extra retail margin had been allowed in 1944 to cover wartime overhead costs, such as ration bookkeeping. As a net result of these changes, average refinery prices of petroleum and petroleum products dropped more than 3 percent, and average retail prices of gasoline and fuel oil were 0.1 percent and 14 percent lower, respectively.

As the quarter drew to a close, however, oil supplies were threatened by refinery strikes in the Middle West and along the Gulf and Pacific Coasts. By September 30, employees directly out of work because of these disputes totaled almost 32,000, refining capacity tied up was over 1,200 thousand barrels daily, and "unofficial" rationing of gasoline was functioning in Detroit and Toledo.

Prices for coal and coke continued to move upward and production downward between June and September. Composite prices for anthracite in primary markets rose 5 percent and retail prices for anthracite chestnut increased about 7.5 percent, to the highest levels of the last 30 years. Primary-market prices for bituminous coal rose 0.7 percent and retail prices for domestic sizes 0.3 percent, almost entirely as a result of small ceiling increases of 3 to 20 cents per ton in mine prices of bituminous coal, allowed by OPA on August 3. On August 7, ceilings for byproduct coke were raised 40 cents per ton at all levels of sale, "to compensate producers for increased coal and labor costs."

Even after VJ-day, 1945 losses of manpower, wage disputes, and to a small extent the demands of liberated areas in Europe were believed likely to make the solid-fuels supply uncomfortably tight during the winter of 1945–46. A strike of bituminous-coal mine supervisory employees began in the week ending September 22, to obtain recognition of the United Mine Workers as the bargaining agency for mine foremen, and grew swiftly. By the end of the month 180 mines were closed and an estimated 350 thousand tons of production was being lost daily. Shipments of bituminous coal from the Appalachian area were proceeding in most cases, under SFAW directive, only to such essential consumers as utilities, or to Lake ports for pre-winter transport.

National war time, which had smoothed the load of electric utilities in most areas since January 20, 1942, was abolished September 30, and basic WPB limitations on materials needed by utilities for maintenance and new construction were removed on the same day.

HOUSING

The war's end and cut-backs in war activity brought little or no relief in the housing situation. Housing shortages in large cities generally remained acute, and demand for rental housing by returning war veterans augmented the shortage in some cities. Relaxation of building restrictions brought no immediate relief and the sales market continued active. Some landlords notified tenants that they planned to raise rents as soon as rent controls were removed.

Rents in large cities generally remained stable during the period, as the result of continuing OPA controls, but slight changes were reported for individual cities. OPA adjustments were frequently the reason for rent changes (both increases and decreases) and almost half of them were accompanied by changes in tenants.

Migration of discharged war workers did not affect the rental market during the quarter. Some cities reported that discharged workers were being absorbed by other industries within the city. In some other cities from which there was an exodus of war workers, housing conditions in most instances had previously been so tight that habitable vacancies were still at a premium. Evictions increased in some areas as returning veterans took possession of their homes, which had been rented during the war. Women expecting their husbands to return from overseas were looking for "better places," particularly single houses instead of apartments. However, in a few cities, such as Philadelphia and San Francisco, relaxation of restrictions on the occupancy of public war housing alleviated the housing shortages for distressed service families and others.

Many tenants still were forced to buy in order to have a place to live, and eviction of tenants in order to sell continued high. In some instances, real-estate agencies were offering bonuses to tenants to induce them to move without bringing an eviction case before OPA.

With the scarcity of building materials, it was not expected that current overcrowded housing conditions would be alleviated soon, even with unrestricted building after October 15. Some cities were making plans for extensive building programs as soon as materials became available in sufficient quantities.

Prices of Industrial Goods

Prices of industrial goods moved generally higher during the quarter under review, with advances in every major field. Average prices for building materials rose 0.5 percent, reflecting advances for a number of products; chemicals and allied products increased 0.3 percent in price; and fuel and lighting materials and metals and metal products each rose 0.2 percent. Most of the increases reflected upward adjustment of OPA ceilings to relieve the pressures of higher labor and material costs which had developed before the end of the war. In only a few cases were market prices directly affected by the end of hostilities.

Comparison with price movements during World War I emphasizes the relative stability of prices during World War II. Thus, prices for chemicals and allied products, which more than doubled in the 4 years of the First World War increased 28 percent during World War II. Similar comparisons for other major groups of industrial goods, are given in table 3.

Immediately after VJ-day, most WPB controls affecting industrial goods were removed or relaxed and resumption of civilian production was permitted. Physical plant reconversion presented no major problem for most industrial-goods industries. In general such industries had produced civilian-type products during the war, although military requirements absorbed most of their output. For some manufacturers reconversion involved shipments to new customers, but no other important changes. In other industries, physical reconversion problems were minor, but the transference to civilian production involved a shift to volume production of goods which had been in little demand during the war and which were less profitable than war products. In such cases, reconversion was accompanied by petitions for price increases to absorb cost increases which had occurred during the war.

TABLE 3.—*Percent of Change in Prices of Industrial Goods in Primary Markets in Specified Periods*

Commodity group	Percent of change—					
	In last quarter, June 1945 to Sept. 1945	In last year, Sept. 1944 to Sept. 1945	From hold-the-line order,[1] May 1943 to Sept. 1945	From OPA's Gen. Max. Price Reg., May 1942 to Sept. 1945	World War II, Aug. 1939 to Aug. 1945	World War I, July 1914 to Nov. 1918
Fuel and lighting materials	+0.2	+1.3	+4.1	+7.8	+16.8	+105.2
Metals and metal products	+.2	+1.1	+1.1	+1.0	+12.3	+81.4
Building materials	+.5	+1.7	+6.8	+7.2	+31.5	+92.4
Chemicals and allied products	+.3	+.4	+.5	−1.2	+28.4	+128.5
Miscellaneous commodities	0	+1.3	+3.2	+4.8	+29.3	+61.5

[1] The President's hold-the-line order was issued April 8, 1943. The peak of the price rise which had led to this order was reached in May, which is, therefore, used for this comparison.

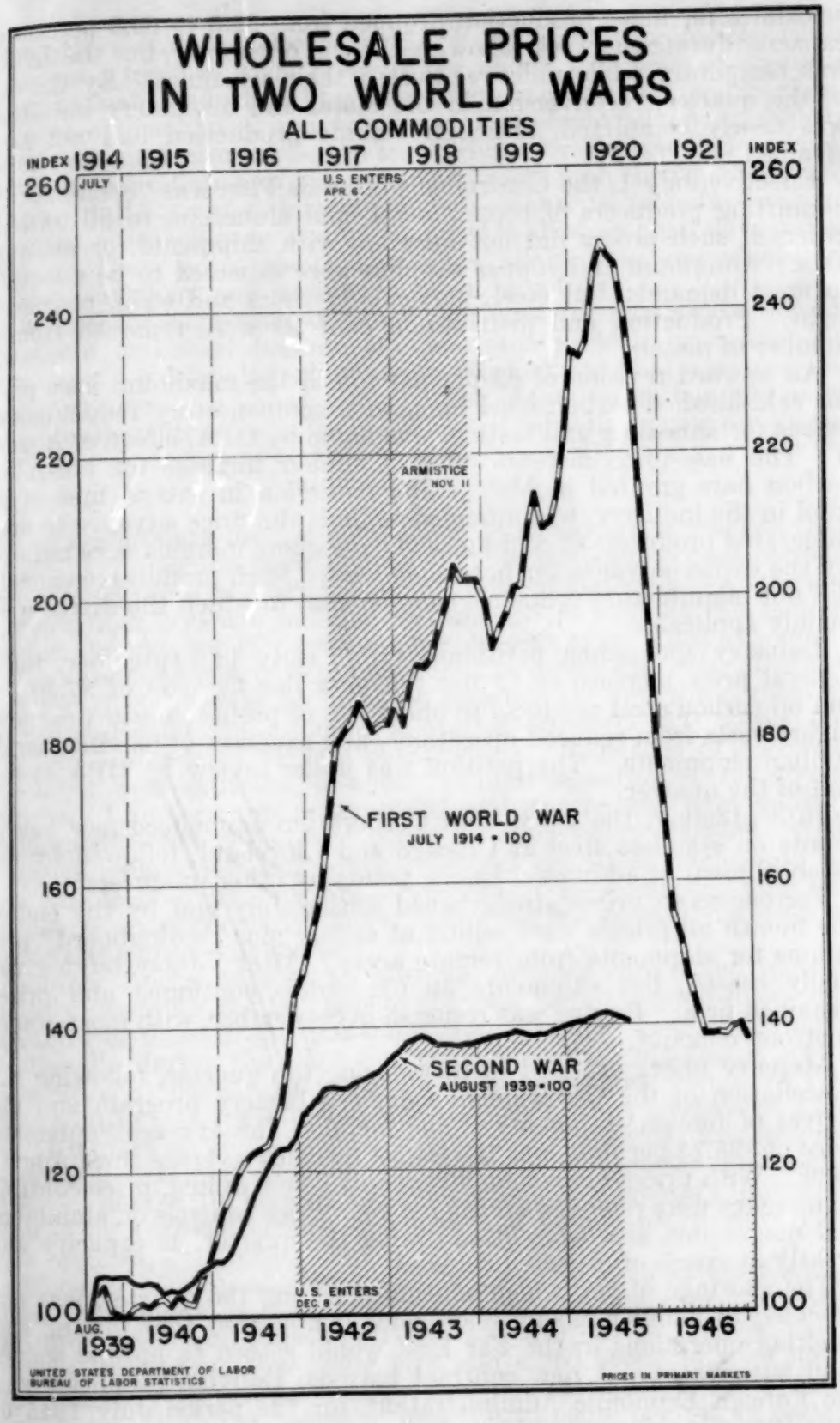
In the automobile industry, in which plants had been converted to manufacture of products often radically different from peacetime products, physical plant reconversion was largely complete by the end of the quarter. Demands for wage increases, which were resisted by the companies, and a generally unsettled labor situation in Detroit prevented the expansion of output and it seemed probable that previous estimates of production during 1945 would not be attained.

Of major importance in the building-materials industry was the relatively low rate of production of many materials during the war, and the difficulty of reopening plants and recruiting workers for manufacture of products to meet the expected demand arising from unrestricted private construction after October 15.

METALS AND MACHINERY

Prices of metals and metal products continued to advance during the third quarter, following the upward trend which began in January 1945 after 2 years of price stability. During the first 9 months of 1945 this group of commodities advanced 0.9 percent to a point 12.6 percent above prewar levels.

The cessation of hostilities in the Pacific had little immediate effect on metal markets. Supplies became more plentiful but most metals, both primary and scrap, continued to sell at ceiling levels. Steel-mill


WHOLESALE PRICES
IN TWO WORLD WARS
ALL COMMODITIES
INDEX
1914
1915
1916
1917
1918
1919
1920
1921
INDEX
260
JULY
U.S. ENTERS
APR. 6
240
220
ARMISTICE
NOV. 11
200
180
FIRST WORLD WAR
JULY 1914 = 100
160
140
SECOND WAR
AUGUST 1939=100
120
100
U.S. ENTERS
DEC. 8
AUG.
1939
1940
1941
1942
1943
1944
1945
1946
UNITED STATES DEPARTMENT OF LABOR
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PRICES IN PRIMARY MARKETS

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schedules for ingot production dropped from 82.5 to 69.9 percent of capacity during the week following the end of the war, but the decline was temporary while mills readjusted their schedules. By the end of the quarter, reconversion in the metal and machinery industries was nearly completed, although volume production had not been attained.

Effective July 1, the Controlled Materials Plan was "open-ended," permitting producers of copper, steel, and aluminum to fill unrated orders if such orders did not interfere with shipments for essential uses. Aluminum and copper supplies were expected to be adequate to meet demands, but steel, particularly sheet and strip, continued tight. Production and distribution controls were removed from a number of metals.

An upward revision of $2 per net ton in the maximum base price for cold-finished carbon steel bars, with compensatory reductions in extras for annealing and testing, was made by OPA, effective August 6. The base-price increase offset a similar increase for hot-rolled carbon bars granted in May. The reduction in extras, first of its kind in the industry, was intended to limit the price advance to non-integrated producers of cold-finished bars whose margins were reduced by the earlier advance for hot-rolled bars. Such producers generally did not manufacture ordnance components, to which the extras were mainly applicable.

Industry spokesmen petitioned OPA, early in September, for a general price increase of $7 per ton or a flat increase of $7.50 per ton on carbon steel products to offset loss of profitable war products, higher costs from reduced operations, and expenses of handling small civilian shipments. The petition was under review by OPA at the end of the quarter.

In September, the U. S. Steel Corporation announced new basing points on stainless steel at Chicago and Cleveland, followed by the establishment of additional basing points by other producers.

Ferrous-scrap prices strengthened during July and by the end of the month all grades were selling at ceiling plus "springboard" premiums for shipments from remote areas. After VJ-day buying virtually ceased, but shipments on old orders continued and prices remained firm. Buying was resumed in September, with most grades in strong demand.

Mercury prices dropped further during the quarter, following the cancellation of the Government's dry-cell battery program and the arrival of foreign shipments of the metal. The average September price of $95.75 per flask was the lowest monthly average since August 1939. With prices more than 40 percent below ceiling, price controls on mercury were removed on August 24. Price controls on aluminum and magnesium also were lifted during the quarter, as capacity was greatly in excess of expected demand.

The shortage of tin, which continued during the quarter, was not expected to hamper reconversion since it appeared that mining and smelting operations in the Far East would return to normal sooner than anticipated. A new contract between Bolivian producers and the Foreign Economic Administration, for the period July 1945 to June 1946, set prices at 63.50 cents per pound, f. o. b. South American ports, for shipments made during the 3 months ending September 30, 1945, with gradual reductions to 58.50 cents per pound for imports

during the second quarter of 1946. Price ceilings for foreign silver were raised from 45 to 71.11 cents per pound (the price of domestic silver) to enable industrial buyers to compete in international markets.

Prices of machinery and other metal products advanced slightly as more manufacturers began to produce for the civilian market. Following cancellation of many war contracts with their higher profit margins, OPA granted interim price increases to manufacturers of construction machinery and of cast-iron soil pipe, pending detailed studies. Price adjustments also were allowed to manufacturers of farm machinery and certain gray-iron foundries.

Disposal of Government-owned facilities for the production of aluminum and steel became an important problem with the end of the war. No definite policy was established, but the Department of Justice recommended that sale of these plants be so handled as to promote competition, even to the extent of subsidizing new producers.

BUILDING MATERIALS

Average primary-market prices of building materials rose less than 1 percent during the third quarter, but, in contrast to past periods, increases occurred in every major subgroup of materials. At the end of September, average building-material prices were at the highest level in the past quarter century, 118 percent of the 1926 average.

The announcement in September that governmental restrictions on building (L–41) would be lifted on October 15, and the revocation on September 30 of the lumber allocation order (L–335) opened the way for unrestricted private construction. Shortages of materials and labor were expected, however, to limit construction for several months. Lumber supplies improved with the reduction of military requirements, but supplies of brick, structural clay products, hardware, and plumbing and heating fixtures remained inadequate for any sizable building program. Supplies of cast-iron soil pipe and fittings were particularly short, reflecting inadequate numbers of workers at southern foundries.

Lumber stocks were at an all-time low, but direct and indirect military needs for the last half of the year were expected to be only one-third of those in the first 6 months. Prices of lumber advanced fractionally during the third quarter. Southern Pine 1-inch boards were raised $1 per M b.m. in July. At the same time, Southern Pine dimension in size 2 x 4 inches was allowed a price increase of $3.50 per M b.m. in an effort to meet critical military needs; this increase was revoked late in August. Mill prices for Douglas Fir boards dropped nearly 10 percent in September as temporary increases, allowed in April to increase production of boards for military uses, were revoked.

Prices of structural clay products rose 1½ percent and cement prices fractionally as the Government continued its efforts to maintain production and prevent further closing of plants in these fields. Ceilings on vitrified-clay sewer pipe and allied products were raised approximately 10 percent in July, and in September prices of brick were increased $2 per thousand and tile 80 cents per ton in certain areas, while cement manufacturers were allowed to raise their prices 10 cents per barrel above previous ceilings.

Plumbing and heating materials prices advanced 2.6 percent, as a group, in August and September. With the contemplated removal of all building restrictions, ceiling prices for cast-iron radiators were advanced more than 8 percent in August, as OPA moved to halt the wartime decline in production. Prices for lavatories continued to advance in August and September as additional manufacturers moved to ceiling prices for the first time since the spring of 1944.

Except for rosin, prices of paints and paint materials were generally stable. Quotations for rosin advanced 95 cents per hundred pounds following a ceiling increase approved by the Office of Economic Stabilization on the recommendation of the Department of Agriculture, to improve supplies.

CHEMICALS

Relaxation of war controls and reduction in military requirements for chemicals during the quarter had little effect on the market situation for most chemicals. In general, reconversion required merely a transfer from production for military uses to production for civilian uses with demand on as firm a basis as before. Some improvement occurred in supplies of those chemicals produced in the United States; declines occurred in the market prices of a few chemicals for which civilian demand was unable to absorb total production. Thus, toluene fell 8 percent in September as munitions production, which had been taking 95 percent of the supply, was reduced.

An advance of 0.3 percent in the group index for chemicals and allied products resulted from substantial price increases for a small number of chemicals. Prices for ergot and nux vomica advanced 4.5 percent and 17.6 percent, respectively, late in August—a reflection of the small available stocks. Silver nitrate prices rose 45 percent in September, following earlier ceiling increases for foreign silver. Acetone prices dropped 14 percent, with improved supplies and lower production costs of an important producer.

Potash quotations moved up with the usual seasonal reduction in discounts, but mixed-fertilizer prices were generally firm during the quarter. Purchases by UNRRA for foreign shipment, and continued domestic demand with favorable crop prices, raised tag sales during the first 9 months of 1945 to 25 percent above 1939 levels in the South and to 100 percent above in the Midwest.

Most imported chemicals and drugs continued in tight supply during the quarter. Prices generally were stable with stocks of many materials in "strong hands" and competition from liberated areas limited by production and shipping difficulties. Prices of natural menthol, however, dropped over 60 percent during the period under review as export controls and price supports were removed by the Brazilian Government. Prices of this material have dropped from $15.50 per pound in November 1944 to $3.75 per pound at the end of September 1945.

A large number of chemicals were removed from production and allocation control at the end of August, including some alcohols and their products, penicillin, Vitamin A, and fish-liver oils, and others were "decontrolled" in September.

The supply position of fats improved following VJ-day, and the War Food Administration announced an additional allotment for household soap production. This was expected by the trade to produce

an additional 8 to 10 million pounds of glycerine during the last quarter of the year, improving the tight supply position for this chemical.

PAPER AND PULP AND RUBBER

Average prices for paper and pulp products advanced fractionally during the third quarter with price increases for liner, allowed by OPA to encourage production. Imports of wood pulp from Sweden, larger than original estimates, and decreased military and foreign requirements for paper following the end of the war had little effect on prices but did make possible the lifting of production and allocation controls, except those affecting the printing industry.

Newsprint remained in tight supply, and imports from Europe were not expected to be generally available to civilian consumers until late in 1946. The situation was eased somewhat by WPB's announcement that liberated European areas should obtain newsprint from Scandinavian countries rather than from the United States.

Demand for waste paper continued strong. In the belief that collections by regular dealers would be inadequate, eastern industrial consumers continued paper-salvage campaigns after the end of direct participation by WPB.

Prices of rubber products remained generally unchanged. During the period under review the synthetic rubber and carbon-black expansion programs were discontinued and restrictions on use of carbon black were removed. Restrictions on use of all synthetic rubber except butyl, and on reclaimed scrap, were removed by WPB in August.

Demand for scrap and synthetic rubber continued at high levels. In response to industry requests, WPB ordered the segregation of natural, synthetic, and recap tire peelings by dealers, and OPA set recap grade ceilings 15 percent below those for natural and synthetic peels. The end of gasoline rationing on August 15 aggravated an already tight situation in passenger and truck tires. It was not expected that supplies of Far Eastern rubber would be available in quantity within the near future.

Ownership of Household Equipment in Relation to Income and Size of Community

INFORMATION on the probable demand for household equipment which has been off the market during the war is of great interest to business, labor, and Government agencies concerned with reconversion plans.

Replacement needs can be estimated fairly accurately by business from previous experience. The unknown factor is the number of new customers for modern equipment in the home. On that point, the data here given may throw some light. They present the situation as of December 1941, when incomes were far below wartime levels but before the supplies of durable goods were cut short by conversion to war production. The proportion of families in different income classes whose homes contained modern kitchen, cleaning, and laundry equipment, radios, phonographs, and pianos is shown on a Nation-wide basis and for cities, rural nonfarm and rural farm areas separately.

TABLE 1.—*Housekeeping Families[1] With Specified Kitchen, Cleaning and Laundry Equipment, by Income Class and Type of Community, December 1941*

Equipment and type of community	All housekeeping families and single persons[2]	Housekeeping families and single persons with money income in 1941 of—				
		Under $1,000	$1,000-$2,000	$2,000-$3,000	$3,000-$5,000	$5,000 and over
	Percent of families owning or renting specified equipment					
Refrigerator, electric	52	17	55	78	81	(3)
Urban communities	62	20	58	78	82	86
Rural nonfarm communities	44	16	58	85	92	(3)
Rural farm communities	27	14	36	71	46	(3)
Refrigerator, other mechanical	4	1	3	6	8	(3)
Urban communities	5	1	4	6	8	5
Rural nonfarm communities	2	(4)	1	5	4	(3)
Rural farm communities	3	2	2	7	8	(3)
Kitchen stove, electric	11	5	9	15	23	(3)
Urban communities	10	5	8	10	22	10
Rural nonfarm communities	13	6	13	35	42	(3)
Rural farm communities	8	4	7	29	11	(3)
Kitchen stove, gas	50	20	54	74	71	(3)
Urban communities	74	45	77	85	79	88
Rural nonfarm communities	18	9	24	31	37	(3)
Rural farm communities	7	3	7	23	21	(3)
Electric toaster	52	21	53	74	79	(3)
Urban communities	65	34	60	77	81	86
Rural nonfarm communities	39	17	50	66	75	(3)
Rural farm communities	22	10	29	64	50	(3)
Electric mixer, juicer and/or whipper	15	2	12	24	33	(3)
Urban communities	19	2	12	23	33	48
Rural nonfarm communities	14	3	17	32	42	(3)
Rural farm communities	7	1	7	29	18	(3)
Pressure cooker for canning	9	8	8	8	11	(3)
Urban communities	5	1	4	4	9	15
Rural nonfarm communities	8	5	8	19	16	(3)
Rural farm communities	23	18	26	33	36	(3)
Vacuum cleaner[5]	47	20	47	71	76	(3)
Urban communities	58	23	50	73	77	88
Rural nonfarm communities	36	27	42	71	84	(3)
Rural farm communities	24	11	38	56	40	(3)
Power washing machine	52	29	61	67	58	(3)
Urban communities	52	25	56	63	54	63
Rural nonfarm communities	51	28	66	77	78	(3)
Rural farm communities	50	33	71	87	79	(3)
Electric irons	79	48	90	97	96	(3)
Urban communities	93	69	98	99	98	98
Rural nonfarm communities	68	42	85	98	93	(3)
Rural farm communities	46	31	64	79	64	(3)

[1] Families of 2 or more persons and single consumers that occupied dwellings with housekeeping facilities.
[2] Includes families with incomes of $5,000 and over, and, in farm areas a few with negative incomes not shown separately.
[3] Percentages not published for rural families with incomes of $5,000 or more.
[4] 0.50 percent or less.
[5] Includes electric and hand-operated vacuum cleaners.

In general, the higher the income the larger the proportion of homes that contained these goods. Similarly, with a few exceptions, such equipment was most common in city homes, least common in rural farm homes. It follows, therefore, that if incomes can be maintained at or near wartime levels many families will be in the market for goods they could not afford in 1941. The wartime migration from farms to cities, if not reversed during the reconversion period, may also bring new customers. If the program for expanded rural electrification is

carried through, many farmers with moderate incomes or higher may discard wood and coal cooking stoves for electric ranges, and purchase electrical refrigerators.

It is probable that nonfarm families—urban and rural—that had incomes in excess of $3,000 in 1941 had most of the household equipment they needed. The potential new demand, particularly if prices are maintained at reasonable levels, will be found in the tremendous number of families with incomes of $3,000 or less.

The information presented in tables 1 and 2 is from the Survey of Spending and Saving in Wartime, conducted cooperatively by the Bureau of Labor Statistics and the Bureau of Human Nutrition and Home Economics of the U. S. Department of Agriculture.[1] The figures on ownership and rental of kitchen, cleaning, and laundry equipment relate to families and single persons occupying houses, flats or apartments, since presumably roomers own or rent few of these goods and should not be considered in relation to the possible market for such equipment. As many rented dwelling units, particularly in cities, are equipped with stoves and refrigerators, figures on ownership and rental were combined to provide a more accurate basis for conclusions. Families whose rent covers such facilities would not be probable purchasers. Roomers as well as housekeeping families and single persons, however, were assumed to provide a possible market for radios, phonographs and even pianos.

TABLE 2.—*Families [1] Owning Radios, Phonographs, and Pianos, by Income Class and Type of Community, December 1941*

Musical instrument and type of community	All families and single persons [2]	Families and single persons with money incomes in 1941 of—				
		Under $1,000	$1,000–$2,000	$2,000–$3,000	$3,000–$5,000	$5,000 and over
	Percent of families owning specified musical instrument					
Radio-phonograph	6	1	3	9	15	[3]
Urban communities	8	1	4	9	18	32
Rural nonfarm communities	3	[4]	2	8	8	[3]
Rural farm communities	2	1	3	2	0	[3]
Radio	81	62	87	93	92	[3]
Urban communities	83	58	87	92	92	92
Rural nonfarm communities	78	63	87	98	94	[3]
Rural farm communities	78	68	91	97	89	[3]
Phonograph	13	12	12	14	11	[3]
Urban communities	11	8	10	14	11	20
Rural nonfarm communities	12	12	11	13	12	[3]
Rural farm communities	18	19	20	15	18	[3]
Piano	23	14	18	29	39	[3]
Urban communities	22	12	13	26	36	54
Rural nonfarm communities	21	11	21	42	48	[3]
Rural farm communities	28	20	37	46	57	[3]

[1] Families of 2 or more persons and single consumers.
[2] Includes families with incomes of $5,000 and over and in farm areas a few with negative incomes not shown separately.
[3] Percentages not published for rural families with incomes of $5,000 or more.
[4] 0.50 percent or less.

[1] Data on ownership of household equipment in rural areas were published in Miscellaneous Publication No. 520 of that Department, which also presented detailed data on purchases of goods and services during 1941 and the first quarter of 1942. Similar information on purchases by city families and single persons will be included in Bureau of Labor Statistics Bulletin No. 822, now in press. Preliminary urban and Nationwide summaries are included in Bureau of Labor Statistics Bulletins No. 723 and 724.

Index of Consumers' Prices[1] in Large Cities, October 1945

RETAIL prices of goods and services used by moderate-income city families showed no change on the average between mid-September and mid-October. Clothing costs increased by 0.1 percent, while prices for all other groups of items in the index decreased by the same percentage. The Bureau of Labor Statistics consumers' price index for October 15 and September 15, 1945, was 128.9 percent of the 1935–39 average.

Food costs in large cities declined 0.1 percent during the month, as meats decreased 0.5 percent and fruits and vegetables showed no change. Prices of sweetpotatoes and cabbages dropped seasonally by 10 and 6 percent, and those of spinach and green beans increased 12 and 8 percent, respectively. Apples advanced 2.3 percent in price, following ceiling adjustments in August and September; in mid-October they were 13.6 cents per pound as compared with 4.0 cents in October 1939.

Clothing costs continued to edge upward as sustained civilian demands coupled with the purchases of returning servicemen further depleted the stocks of men's apparel; only higher-priced garments were available. Price increases were reported for topcoats, overcoats, suits, work trousers and overalls, business shirts, underwear, socks, sweaters, and felt hats. In the last month of shoe rationing, prices of men's shoes moved up slightly and shoe-repair costs advanced in a few cities.

Average retail prices of housefurnishings and miscellaneous goods and services decreased 0.1 percent during the month. Prices of sheets advanced more than 5 percent owing to the adjustment of retailers' margins for increases previously allowed to manufacturers.

The decline of 0.1 percent for miscellaneous goods and services represents the first decrease that has occurred in this group since June 1940. Reductions in transportation cost of gasoline to the Atlantic Coast lowered prices of that commodity between 3 and 6 percent in eastern cities. Cigarette prices dropped in a number of cities as retailers resumed their practice of selling cartons and two or more packs at a time. Charges for beauty-shop services increased in four cities.

Fuel, electricity, and ice cost declined 0.1 percent. Lower gas rates to consumers in Denver resulted from a decrease in wholesale prices growing out of a recent Supreme Court decision.

The indexes in the accompanying tables are based on time-to-time changes in the cost of goods and services purchased by wage earners and lower-salaried workers in large cities. They do not indicate

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[1] This index, formerly called the cost-of-living index, measures average changes in retail prices of selected goods, rents, and services, weighted by quantities bought by families of wage earners and moderate-income workers in large cities in 1934–36. The items priced for the index constituted about 70 percent of the expenditures of city families whose incomes averaged $1,524 in 1934–36.

The index does not show the full effect of such factors as changes in quality and the availability of goods. During the war the quality of civilian goods has been lowered. The Bureau has attempted to account for the disappearance of low-priced merchandise by pricing the most similar article available. The President's Committee on the Cost of Living has estimated that such factors, together with certain others not fully measured by the index, would add a maximum of 3 to 4 index points to the index for large cities between January 1941 and September 1944. If small cities were included in the national average, another one-half point would be added.

whether it costs more to live in one city than in another. The data relate to the 15th of each month, except those for January 1941, in table 1. For that month they were estimated for January 1 (the date used in the "Little Steel" decision of the National War Labor Board), by assuming an even rate of change from December 15, 1940, to the next pricing date. The President's "hold-the-line" order was issued April 8, 1943. The peak of the rise which led to that order was reached in May, which is, therefore, used for this comparison.

Food prices are collected monthly in 56 cities during the first four days of the week which includes the Tuesday nearest the 15th of the month. Aggregate costs of foods in each city, weighted to represent food purchases of families of wage earners and lower-salaried workers, have been combined for the United States with the use of population weights. In March 1943, the number of cities included in the food index was increased from 51 to 56, and the number of foods from 54 to 61. Prices of clothing, housefurnishings, and miscellaneous goods and services are obtained in 34 large cities in March, June, September, and December. In intervening months, prices are collected in 21 of the 34 cities for a shorter list of goods and services. Rents are surveyed semiannually in most of the 34 cities (in March and September, or in June and December). In computing the all-items indexes for individual cities and the rent index for the average of large cities because of the general stability of average rents at present, the indexes are held constant in cities not surveyed during the current quarter. Prices for fuel, electricity, and ice are collected monthly in 34 large cities.

TABLE 1.—*Percent of Change in Index of Consumers' Prices for Moderate-Income Families, October 1945, Compared with Earlier Months, by Groups of Items*

Group	October 1945	September 1945	October 1944	May 1943	May 1942	January 1941	August 1939
	This month	Last month	Last year	Hold-the-line order	Gen. Max. Price Reg.	"Little Steel" decision	Month before war in Europe
	Indexes (1935–39=100)						
All items	128.9	128.9	126.5	125.1	116.0	100.8	98.6
Food	139.3	139.4	136.4	143.0	121.6	97.6	93.5
Clothing	148.3	148.2	141.9	127.9	126.2	101.2	100.3
Rent	----	108.3	----	108.0	109.9	105.0	104.3
Fuel, electricity, and ice	110.6	110.7	109.8	107.6	104.9	100.8	97.5
Gas and electricity	95.0	95.2	95.8	96.1	96.6	97.5	99.0
Other fuels and ice	125.7	125.7	123.5	118.7	112.9	104.0	96.3
Housefurnishings	146.6	146.8	141.4	125.1	122.2	100.2	100.6
Miscellaneous	124.5	124.6	122.8	115.3	110.9	101.8	100.4
	Percent of change to October 1945						
All items	----	0	+1.9	+3.0	+11.1	+27.9	+30.7
Food	----	−0.1	+2.1	−2.6	+14.6	+42.7	+49.0
Clothing	----	+.1	+4.5	+15.9	+17.5	+46.5	+47.9
Rent [1]	----	----	----	+.3	−1.5	+3.1	+3.8
Fuel, electricity, and ice	----	−.1	+.7	+2.8	+5.4	+9.7	+13.4
Gas and electricity	----	−.2	−.8	−1.1	−1.7	−2.6	−4.0
Other fuels and ice	----	0	+1.8	+5.9	+11.3	+20.9	+30.5
Housefurnishings	----	−.1	+3.7	+17.2	+20.0	+46.3	+45.7
Miscellaneous	----	−.1	+1.4	+8.0	+12.3	+22.3	+24.0

[1] Percent of change to September 1945. Rent data are collected only in March, June, September, and December.

TABLE 2.—*Percent of Change in Index of Consumers' Prices from Specified Dates to October 1945, by Cities*

City	September 1945	October 1944	May 1943	May 1942	January 1941	August 1939
	Last month	Last year	Hold-the-line order	Gen. Max. Price Reg.	"Little Steel" decision	Month before war in Europe
Average	0	+1.9	+3.0	+11.1	+27.9	+30.7
Baltimore, Md	−.2	+2.9	+3.0	+11.7	+31.1	+33.7
Birmingham, Ala	+.1	+2.5	+5.8	+12.1	+31.0	+35.1
Boston, Mass	−.1	+1.5	+1.8	+9.8	+25.6	+28.2
Buffalo, N. Y	+.1	+1.2	−.2	+6.7	+26.2	+30.6
Chicago, Ill	+.1	+1.4	+2.5	+9.5	+26.1	+29.3
Cincinnati, Ohio	+.3	+2.8	+4.4	+11.6	+29.8	+32.9
Cleveland, Ohio	+.2	+1.2	+2.9	+10.9	+29.1	+31.7
Denver, Colo	+.1	+1.2	+1.8	+9.6	+26.7	+28.5
Detroit, Mich	−.1	+2.8	+2.7	+10.0	+29.4	+32.7
Houston, Tex	−.2	+2.2	+2.3	+9.6	+24.8	+26.4
Kansas City, Mo	0	+2.4	+3.7	+11.3	+29.1	+28.8
Los Angeles, Calif	0	+2.6	+4.9	+11.8	+28.8	+31.3
Minneapolis, Minn	0	+1.7	+2.7	+7.9	+22.9	+25.5
New York, N. Y	−.2	+1.7	+4.1	+14.1	+28.0	+30.6
Philadelphia, Pa	−.2	+2.2	+2.4	+11.4	+28.8	+30.7
Pittsburgh, Pa	+.1	+2.0	+4.1	+12.3	+28.5	+32.1
St. Louis, Mo	+.1	+1.8	+2.3	+9.8	+25.6	+29.4
San Francisco, Calif	+.2	+1.5	+3.7	+13.0	+30.6	+33.8
Savannah, Ga	−.6	+2.2	+4.2	+13.7	+35.6	+38.5
Seattle, Wash	−.4	+1.1	+1.9	+8.8	+29.2	+31.5
Washington, D. C	−.2	+3.2	+4.1	+12.3	+28.9	+30.6

TABLE 3.—*Percent of Change in Index of Consumers' Prices, September 1945 to October 1945, by Cities*

City	Percent of change, September to October 1945, in cost of—					
	All items	Food	Clothing	Fuel, electricity, and ice	House-furnishings	Miscellaneous
Average	0	−0.1	+0.1	−0.1	−0.1	−0.1
Atlanta, Ga		−.7		0		
Baltimore, Md	−.2	−.4	+.3	0	+.8	−.4
Birmingham, Ala	+.1	+.1	+.1	+.1	−.1	0
Boston, Mass	−.1	−.1	+.2	0	−4.5	−.1
Buffalo, N. Y	+.1	+.2	0	0	+.8	−.3
Chicago, Ill	+.1	+.2	−.7	0	+.1	0
Cincinnati, Ohio	+.3	+.6	−.1	−.1	−.1	+.3
Cleveland, Ohio	+.2	+.4	+.3	0	+.3	+.2
Denver, Colo	+.1	+1.4	+.1	−7.4	+.4	+.1
Detroit, Mich	−.1	−.3	−.1	+.1	+.1	0
Houston, Tex	−.2	−.6	+.1	0	+.1	−.1
Indianapolis, Ind		0		0		
Jacksonville, Fla		−1.9		0		
Kansas City, Mo	0	+.1	+.1	0	+.2	0
Los Angeles, Calif	0	0	+.2	0	+.2	0
Manchester, N. H		−.2		0		
Memphis, Tenn		+.3		0		
Milwaukee, Wis		−.3		0		
Minneapolis, Minn	0	0	0	+.1	+.1	0
Mobile, Ala		−.5		0		
New Orleans, La		−.8		−.1		
New York, N. Y	−.2	−.1	+.4	+.1	−.9	−.3
Norfolk, Va		+.1		0		
Philadelphia, Pa	−.2	−.3	+.1	−.1	+.1	−.2
Pittsburgh, Pa	+.1	+.3	+.4	−.1	+.1	−.3
Portland, Maine		−.1		0		
Portland, Oreg		+.3		0		
Richmond, Va		−.6		0		
St. Louis, Mo	+.1	0	+.3	0	+.4	0
San Francisco, Calif	+.2	+.4	0	0	−.1	0
Savannah, Ga	−.6	−1.1	0	+.1	+.4	−.5
Scranton, Pa		−.4		−.2		
Seattle, Wash	−.4	−1.0	+.5	0	+.4	−.2
Washington, D. C	−.2	−.9	+.6	0	+1.3	−.2

TABLE 4.—*Index of Consumers' Prices, October 1945, by Groups of Items and Cities*

City	Indexes (1935–39=100) of cost of—					
	All items	Food	Clothing	Fuel, electricity, and ice	House-furnishings	Miscellaneous
Average	128.9	139.3	148.3	110.6	146.6	124.5
Atlanta, Ga.		140.5		115.4		
Baltimore, Md.	132.0	147.5	155.5	111.3	146.9	123.0
Birmingham, Ala.	133.1	144.2	145.1	107.6	140.2	127.4
Boston, Mass.	124.5	133.3	146.7	116.8	140.0	119.1
Buffalo, N. Y.	128.6	135.6	147.0	107.4	147.3	126.4
Chicago, Ill.	127.6	137.8	141.9	106.5	138.7	122.4
Cincinnati, Ohio	129.3	139.0	149.2	107.7	144.1	126.1
Cleveland, Ohio	131.7	143.3	147.8	113.8	147.0	123.5
Denver, Colo.	126.7	138.0	136.9	97.3	160.8	124.5
Detroit, Mich.	130.7	136.4	148.6	114.7	156.4	131.1
Houston, Tex.	127.3	139.7	141.3	91.1	145.3	125.4
Indianapolis, Ind.		136.0		113.6		
Jacksonville, Fla.		149.0		117.8		
Kansas City, Mo.	127.0	132.9	147.7	112.6	140.7	126.7
Los Angeles, Calif.	132.0	147.2	146.5	92.5	143.4	128.2
Manchester, N. H.		134.6		122.5		
Memphis, Tenn.		148.6		106.6		
Milwaukee, Wis.		137.4		111.5		
Minneapolis, Minn.	125.1	132.6	143.6	104.1	143.9	123.3
Mobile, Ala.		148.1		103.6		
New Orleans, La.		154.4		102.8		
New York, N. Y.	129.3	139.5	155.5	115.0	136.9	126.7
Norfolk, Va.		144.3		120.5		
Philadelphia, Pa.	127.8	137.2	149.0	113.4	146.2	120.4
Pittsburgh, Pa.	130.6	140.0	169.4	112.1	143.0	119.4
Portland, Maine		133.0		113.5		
Portland, Oreg.		149.7		120.5		
Richmond, Va.		137.7		109.9		
St. Louis, Mo.	126.9	141.4	144.8	108.3	128.4	120.0
San Francisco, Calif.	132.9	147.9	143.6	92.9	131.5	133.1
Savannah, Ga.	137.5	155.4	145.8	113.2	158.0	129.8
Scranton, Pa.		138.7		117.7		
Seattle, Wash.	131.9	142.7	147.5	104.7	144.5	132.3
Washington, D. C.	128.8	140.2	160.5	111.1	143.9	128.7

TABLE 5.—*Index of Consumers' Prices for Moderate-Income Families in Large Cities, 1935 to October 1945*

Year and month	Indexes (1935–39=100) of cost of—						
	All items	Food	Clothing	Rent	Fuel, electricity, and ice	House-furnishings	Miscellaneous
1935	98.1	100.4	96.8	94.2	100.7	94.8	98.1
1936	99.1	101.3	97.6	96.4	100.2	96.3	98.7
1937	102.7	105.3	102.8	100.9	100.2	104.3	101.0
1938	100.8	97.8	102.2	104.1	99.9	103.3	101.5
1939	99.4	95.2	100.5	104.3	99.0	101.3	100.7
1940	100.2	96.6	101.7	104.6	99.7	100.5	101.1
1941	105.2	105.5	106.3	106.2	102.2	107.3	104.0
1942	116.5	123.9	124.2	108.5	105.4	122.2	110.9
1943	123.6	138.0	129.7	108.0	107.7	125.6	115.8
1944	125.5	136.1	138.8	108.2	109.8	136.4	121.3
1945:							
Jan. 15	127.1	137.3	143.0	(1)	109.7	143.6	123.3
Feb. 15	126.9	136.5	143.3	(1)	110.0	144.0	123.4
Mar. 15	126.8	135.9	143.7	108.3	110.0	144.5	123.6
Apr. 15	127.1	136.6	144.1	(1)	109.8	144.9	123.8
May 15	128.1	138.8	144.6	(1)	110.0	145.4	123.9
June 15	129.0	141.1	145.4	108.3	110.0	145.8	124.0
July 15	129.4	141.7	145.9	(1)	111.2	145.6	124.3
Aug. 15	129.3	140.9	146.4	(1)	111.4	146.0	124.5
Sept. 15	128.9	139.4	148.2	108.3	110.7	146.8	124.6
Oct. 15 [2]	128.9	139.3	148.3	(1)	110.6	146.6	124.5

[1] Rents not surveyed in this month.
[2] Preliminary figures.

Retail Prices of Food in October 1945

PERCENTAGE changes in retail food prices on October 16, 1945, as compared with prices in the previous month and in October 1944, are shown in table 1.

TABLE 1.—*Percent of Change in Retail Prices of Food in 56 Large Cities Combined,[1] by Commodity Groups, in Specified Periods*

Commodity group	Sept. 18, 1945, to Oct. 16, 1945	Oct. 17, 1944, to Oct. 16, 1945	May 18, 1943, to Oct. 16, 1945	Jan. 14, 1941, to Oct. 16, 1945	Aug. 15, 1939, to Oct. 16, 1945
All foods	−0.1	+2.1	−2.6	+42.4	+49.0
Cereals and bakery products	0	+.5	+1.4	+15.0	+16.8
Meats	−.5	+1.2	−5.3	+29.6	+36.9
Beef and veal	−.2	0	−9.9	+8.0	+18.7
Pork	0	+.4	−10.3	+30.8	+28.0
Lamb	−.1	+1.1	−3.8	+38.0	+37.9
Chickens	−2.3	+1.6	+3.2	+56.7	+61.0
Fish, fresh and canned	+.7	+7.5	+10.4	+86.4	+122.2
Dairy products	−.1	−.2	−2.6	+28.6	+43.2
Eggs	+.9	+3.6	+30.5	+90.5	+104.5
Fruits and vegetables	0	+5.9	−9.6	+84.9	+86.7
Fresh	0	+7.0	−11.4	+95.2	+96.4
Canned	0	+.5	−.5	+42.7	+42.4
Dried	+.1	+1.9	+6.9	+69.6	+87.0
Beverages	0	+.3	+.2	+37.2	+31.4
Fats and oils	−.1	+.7	−1.8	+54.4	+46.7
Sugar and sweets	0	+.1	−.9	+32.7	+32.3

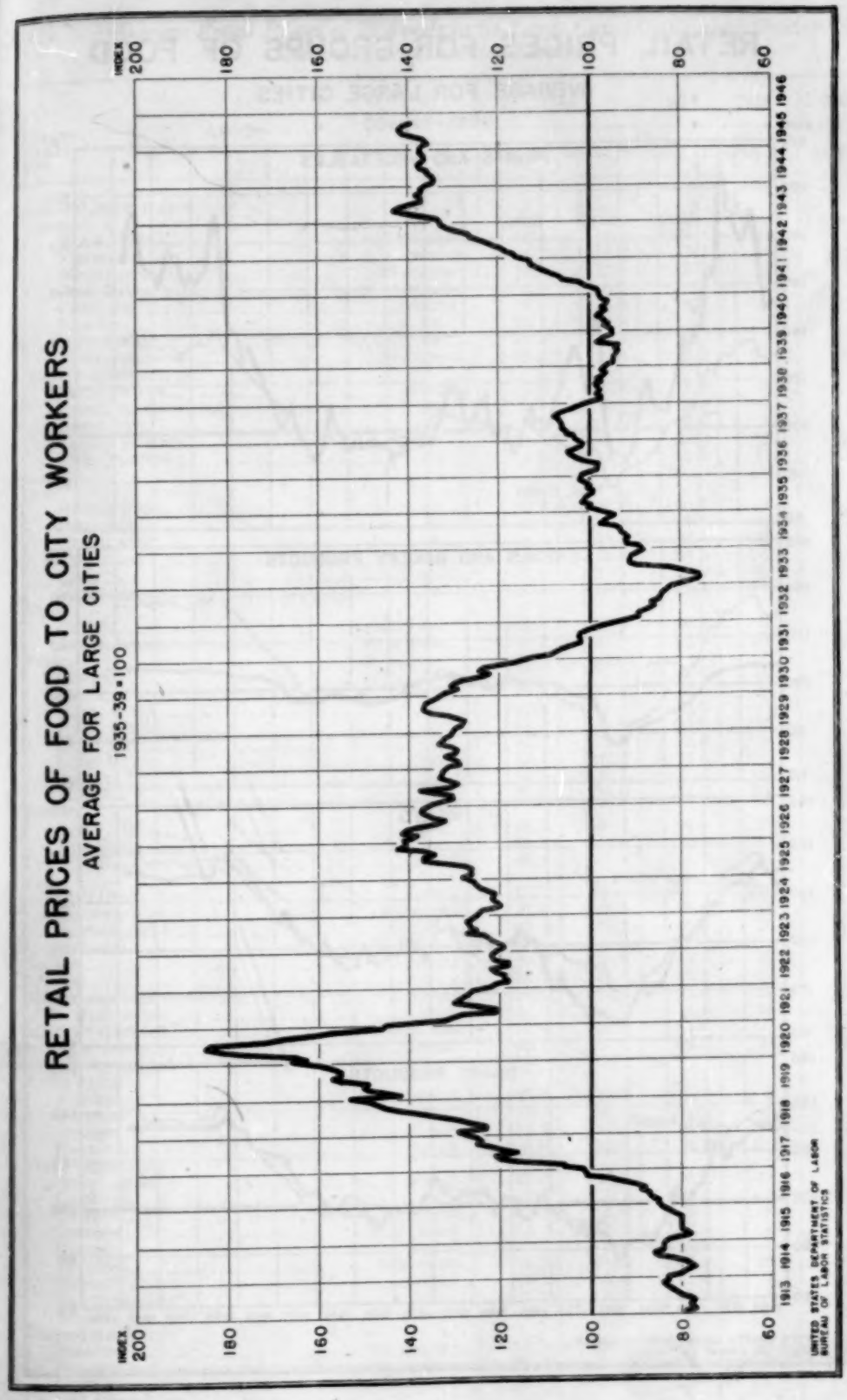
[1] The number of cities included in the index was changed from 51 to 56 in March 1943, with the necessary adjustments for maintaining comparability. At the same time the number of foods in the index was increased from 54 to 61.

TABLE 2.—*Indexes of Retail Prices of Food in 56[1] Large Cities Combined,[2] by Commodity Groups, on Specified Dates*

[1935–39=100]

Commodity group	1945		1944	1943	1941	1939
	Oct. 16[3]	Sept. 18	Oct. 17	May 18	Jan. 14	Aug. 15
All foods	139.3	139.4	136.4	143.0	97.8	93.5
Cereals and bakery products	109.1	109.1	108.6	107.6	94.9	93.4
Meats	131.0	131.6	129.4	138.3	101.1	95.7
Beef and veal	118.2	118.4	118.2	131.2	109.4	99.6
Pork	112.6	112.6	112.2	125.5	86.1	88.0
Lamb	136.2	136.4	134.7	141.6	98.7	98.8
Chickens	152.3	155.9	149.9	147.6	97.2	94.6
Fish, fresh and canned	221.3	219.8	205.8	200.5	118.7	99.6
Dairy products	133.3	133.4	133.6	136.9	105.1	93.1
Eggs	185.5	183.9	179.0	142.1	97.4	90.7
Fruits and vegetables	172.5	172.5	162.9	190.8	93.3	92.4
Fresh	182.3	182.3	170.4	205.8	93.4	92.8
Canned	130.4	130.4	129.7	131.1	91.4	91.6
Dried	168.9	168.8	165.7	158.0	99.6	90.3
Beverages	124.7	124.7	124.3	124.5	90.9	94.9
Fats and oils	124.0	124.1	123.1	126.3	80.3	84.5
Sugar and sweets	126.5	126.5	126.4	127.6	95.3	95.6

[1] Indexes based on 51 cities combined prior to March 1943.
[2] Aggregate costs of 61 foods (54 foods prior to March 1943) in each city, weighted to represent total purchases by families of wage earners and lower-salaried workers, have been combined with the use of population weights.
[3] Preliminary.


RETAIL PRICES OF FOOD TO CITY WORKERS
AVERAGE FOR LARGE CITIES
1935-39=100
INDEX
200
180
160
140
120
100
80
60
1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946
UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

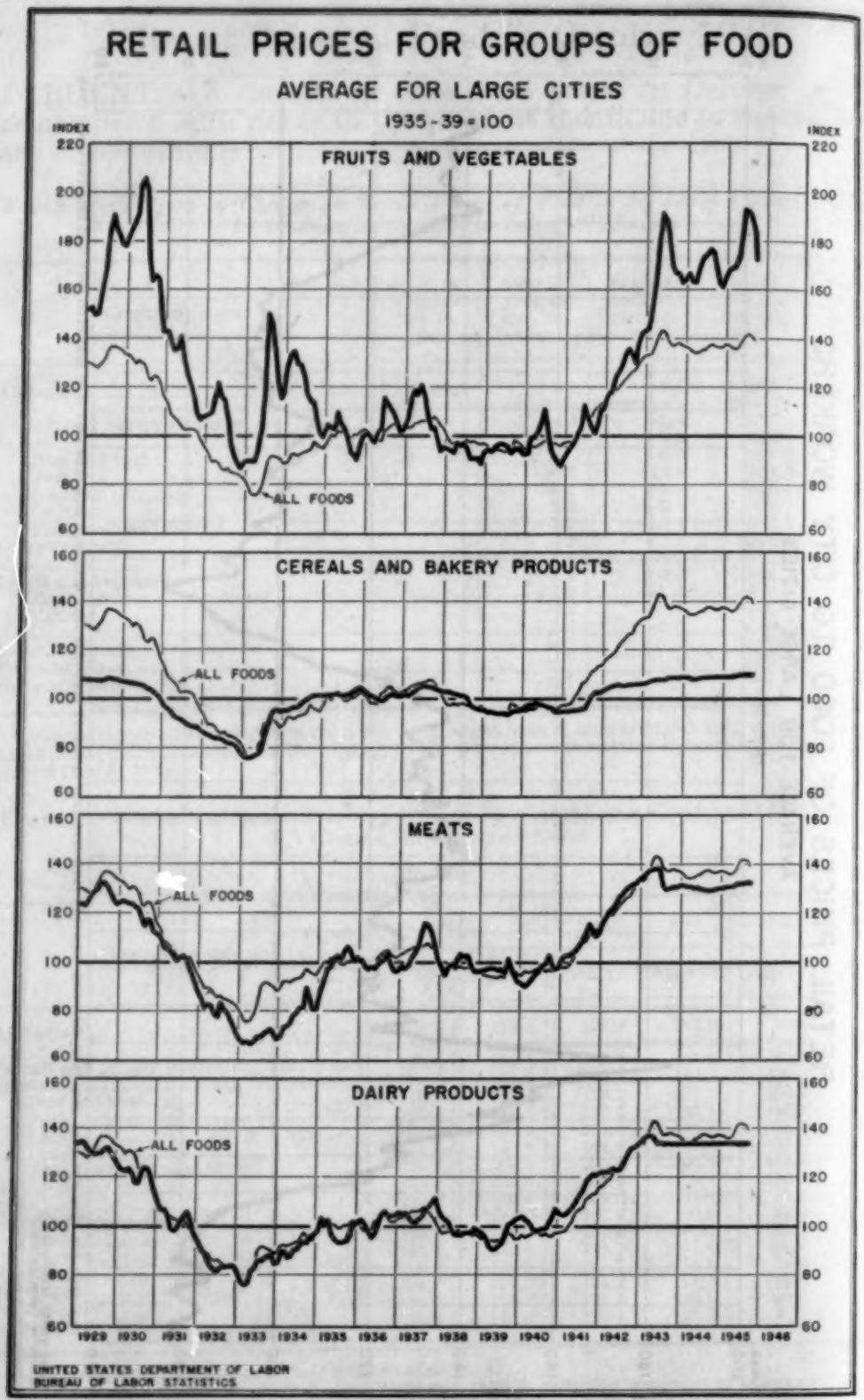

RETAIL PRICES FOR GROUPS OF FOOD
AVERAGE FOR LARGE CITIES
1935-39=100
INDEX
FRUITS AND VEGETABLES
ALL FOODS
CEREALS AND BAKERY PRODUCTS
ALL FOODS
MEATS
ALL FOODS
DAIRY PRODUCTS
ALL FOODS
220
200
180
160
140
120
100
80
60
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946
UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

TABLE 3.—*Average Retail Prices of 78 Foods in 56 Large Cities Combined,[1] October 1945 Compared with Earlier Months*

Article		1945		1944	1941	1939
		Oct. 16[2]	Sept. 18	Oct. 17	Jan. 14	Aug. 15
Cereals and bakery products:						
Cereals:		*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Flour, wheat	10 pounds	64.1	64.2	64.1	41.4	35.8
Macaroni	pound	15.7	15.7	15.7	13.8	14.0
Wheat cereal[3]	28 ounces	23.4	23.5	23.2	23.5	24.2
Corn flakes	8 ounces	6.7	6.7	6.5	7.1	7.0
Corn meal	pound	6.5	6.5	6.4	4.2	4.0
Rice[3]	do	12.7	12.8	12.8	7.9	7.5
Rolled oats	do	10.4	10.4	10.1	7.1	7.1
Flour, pancake[3]	20 ounces	12.4	12.4	12.2	(4)	(4)
Bakery products:						
Bread, white	pound	8.8	8.8	8.8	7.8	7.8
Bread, whole-wheat	do	9.6	9.6	9.6	8.7	8.8
Bread, rye	do	9.9	9.9	9.9	9.0	9.2
Vanilla cookies	do	29.1	28.7	28.2	25.1	(5)
Soda crackers	do	18.9	18.9	18.9	15.0	14.8
Meats:						
Beef:						
Round steak	do	40.9	41.0	40.7	38.6	36.4
Rib roast	do	33.1	33.1	33.0	31.5	28.9
Chuck roast	do	28.4	28.3	28.4	25.2	22.5
Stew meat[3]	do	29.9	29.8	30.6	(4)	(4)
Liver	do	37.2	37.1	37.3	(5)	(5)
Hamburger	do	27.3	27.4	27.5	(4)	(4)
Veal:						
Cutlets	do	44.5	44.4	44.6	45.2	42.5
Roast, boned and rolled[3]	do	35.1	34.7	35.9	(4)	(4)
Pork:						
Chops	do	37.2	37.2	37.2	29.1	30.9
Bacon, sliced	do	41.2	41.2	40.9	30.1	30.4
Ham, sliced	do	49.4	49.4	50.0	45.1	46.4
Ham, whole	do	34.7	34.4	35.2	26.2	27.4
Salt pork	do	22.0	22.0	22.3	16.7	15.4
Liver[3]	do	22.1	22.2	22.0	(4)	(4)
Sausage[3]	do	38.7	38.7	38.5	(4)	(4)
Bologna, big[3]	do	34.0	34.0	34.2	(4)	(4)
Lamb:						
Leg	do	40.4	40.5	39.9	27.8	27.6
Rib chops	do	45.9	45.8	45.2	35.0	36.7
Poultry: Roasting chickens	pound	46.1	47.0	44.9	31.1	30.9
Fish:						
Fish (fresh, frozen)	do	(6)	(6)	(6)	(6)	(6)
Salmon, pink	16-oz. can	23.0	23.3	23.0	15.7	12.8
Salmon, red[3]	do	40.2	39.9	40.9	26.4	23.1
Dairy products:						
Butter	pound	49.9	50.0	49.9	38.0	30.7
Cheese	do	35.7	35.6	36.1	27.0	24.7
Milk, fresh (delivered)	quart	15.6	15.6	15.6	13.0	12.0
Milk, fresh (store)	do	14.5	14.5	14.5	11.9	11.0
Milk, evaporated	14½-oz. can	10.0	10.0	10.0	7.1	6.7
Eggs: Eggs, fresh	dozen	65.7	65.2	63.5	34.9	32.0
Fruits and vegetables:						
Fresh fruits:						
Apples	pound	13.6	13.3	9.8	5.2	4.4
Bananas	do	10.4	10.5	11.1	6.6	6.1
Oranges	dozen	51.2	51.6	49.6	27.3	31.5
Grapefruit[3]	each	10.0	11.3	9.2	(7)	(7)
Fresh vegetables:						
Beans, green	pound	17.0	15.8	14.7	14.0	7.2
Cabbage	do	4.8	5.1	4.7	3.4	3.9
Carrots	bunch	9.0	8.9	8.9	6.0	4.6
Lettuce	head	12.2	12.1	12.2	8.4	8.4
Onions	pound	6.6	6.8	4.8	3.6	3.6
Potatoes	15 pounds	62.0	61.9	67.1	29.2	34.4
Spinach	pound	11.1	9.9	11.4	7.3	7.8
Sweetpotatoes	do	7.7	8.6	7.1	5.0	5.5
Beets[3]	bunch	8.2	8.1	7.6	(4)	(4)
Canned fruits:						
Peaches	No. 2½ can	27.5	27.3	27.8	16.5	17.1
Pineapple	do	26.3	26.3	27.5	20.9	21.0
Grapefruit juice	No. 2 can	14.5	14.5	14.4	(7)	(7)
Canned vegetables:						
Beans, green	do	13.1	13.1	13.1	10.0	10.0
Corn	do	14.8	14.8	14.6	10.7	10.4
Peas	do	13.3	13.2	13.3	13.2	13.6
Tomatoes	do	12.2	12.1	12.0	8.4	8.6
Soup, vegetable[3]	11-oz. can	13.0	13.2	13.4	(4)	(4)

See footnotes at end of table.

TABLE 3.—*Average Retail Prices of 78 Foods in 56 Large Cities Combined,*[1] *October 1945 Compared with Earlier Months*—Continued

Article		1945		1944	1941	1939
		Oct. 16[2]	Sept. 18	Oct. 17	Jan. 14	Aug. 15
Fruits and vegetables—Continued.		*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Dried fruits: Prunes	pound	17.3	17.5	17.0	9.6	8.8
Dried vegetables:						
Navy beans	do	11.5	11.5	10.9	6.5	5.8
Soup, dehydrated, chicken noodle[3]	ounce	3.8	3.8	3.7	(4)	(4)
Beverages:						
Coffee	pound	30.6	30.6	30.3	20.7	22.3
Tea	¼ pound	24.3	24.2	23.9	17.6	17.2
Cocoa[3]	½ pound	10.4	10.4	10.4	9.1	8.6
Fats and oils:						
Lard	pound	18.8	18.8	18.7	9.3	9.9
Shortening other than lard—						
In cartons	do	20.0	20.0	20.2	11.3	11.7
In other containers	do	24.5	24.5	24.8	18.3	20.2
Salad dressing	pint	24.5	24.0	25.7	20.1	(5)
Oleomargarine	pound	24.3	24.3	24.1	15.6	16.5
Peanut butter	do	28.6	28.6	28.4	17.9	17.9
Oil, cooking or salad[3]	pint	30.0	30.0	30.7	(5)	(5)
Sugar and sweets:						
Sugar	pound	6.6	6.7	6.7	5.1	5.2
Corn sirup	24 ounces	15.8	15.8	15.8	13.6	13.7
Molasses[3]	18 ounces	15.8	15.8	15.7	13.4	13.6
Apple butter[3]	16 ounces	14.3	14.2	13.7	(4)	(4)

[1] Data are based on 51 cities combined prior to January 1943.
[2] Preliminary.
[3] Not included in index.
[4] First priced, February 1943.
[5] Not priced.
[6] Composite price not computed.
[7] First priced, October 1941.

TABLE 4.—*Indexes of Average Retail Prices of All Foods, by Cities,*[1] *on Specified Dates*

[1935–39=100]

City	1945		1944	1941	1939
	Oct. 16[2]	Sept. 18	Oct. 17	Jan. 14	Aug. 15
United States	139.3	139.4	136.4	97.8	93.5
Atlanta, Ga	140.5	141.5	136.9	94.3	92.5
Baltimore, Md	147.5	148.1	142.0	97.9	94.7
Birmingham, Ala	144.2	144.1	139.5	96.0	90.7
Boston, Mass	133.3	133.4	131.1	95.2	93.5
Bridgeport, Conn	136.4	136.0	135.4	96.5	93.2
Buffalo, N. Y	135.6	135.3	134.7	100.2	94.5
Butte, Mont	136.7	137.7	133.1	98.7	94.1
Cedar Rapids, Iowa[3]	142.2	142.9	138.8	95.9	----
Charleston, S. C	139.4	139.5	134.5	95.9	95.1
Chicago, Ill	137.8	137.5	135.8	98.2	92.3
Cincinnati, Ohio	139.0	138.2	133.4	96.5	90.4
Cleveland, Ohio	143.3	142.7	141.9	99.2	93.6
Columbus, Ohio	132.6	132.5	128.7	93.4	88.1
Dallas, Tex	137.1	137.6	131.9	92.6	91.7
Denver, Colo	138.0	136.1	136.2	94.8	92.7
Detroit, Mich	136.4	136.8	132.8	97.0	90.6
Fall River, Mass	132.8	132.4	131.2	97.5	95.4
Houston, Tex	139.7	140.5	136.6	102.6	97.8
Indianapolis, Ind	136.0	136.0	132.7	98.2	90.7
Jackson, Miss.[3]	150.0	151.2	149.3	105.3	----
Jacksonville, Fla	149.0	151.9	146.1	98.8	95.8
Kansas City, Mo	132.9	132.8	129.7	92.4	91.5
Knoxville, Tenn.[3]	161.1	160.8	156.3	97.1	----
Little Rock, Ark	138.3	139.3	135.4	95.6	94.0
Los Angeles, Calif	147.2	147.2	143.0	101.8	94.6

See footnotes at end of table.

TABLE 4.—*Indexes of Average Retail Prices of All Foods, by Cities,*[1] *on Specified Dates*—Continued

[1935-39=100]

City	1945		1944	1941	1939
	Oct. 16[2]	Sept. 18	Oct. 17	Jan. 14	Aug. 15
Louisville, Ky	133.5	133.5	131.0	95.5	92.1
Manchester, N. H	134.6	134.9	133.4	96.6	94.9
Memphis, Tenn	148.6	148.1	144.9	94.2	89.7
Milwaukee, Wis	137.4	137.8	135.7	95.9	91.1
Minneapolis, Minn	132.6	132.6	130.4	99.0	95.0
Mobile, Ala	148.1	148.9	145.4	97.9	95.5
Newark, N. J	141.0	140.7	138.8	98.8	95.6
New Haven, Conn	135.5	135.7	135.7	95.7	93.7
New Orleans, La	154.4	155.7	150.7	101.9	97.6
New York, N. Y	139.5	139.7	137.2	99.5	95.8
Norfolk, Va	144.3	144.1	140.8	95.8	93.6
Omaha, Nebr	131.1	131.1	130.0	97.9	92.3
Peoria, Ill	145.5	145.6	139.9	99.0	93.4
Philadelphia, Pa	137.2	137.6	133.5	95.0	93.0
Pittsburgh, Pa	140.0	139.6	136.6	98.0	92.5
Portland, Maine	133.0	133.1	133.8	95.3	95.9
Portland, Oreg	149.7	149.3	146.5	101.7	96.1
Providence, R. I	139.1	140.0	134.6	96.3	93.7
Richmond, Va	137.7	138.5	134.7	93.7	92.2
Rochester, N. Y	134.7	134.9	132.5	99.9	92.3
St. Louis, Mo	141.4	141.4	138.0	99.2	93.8
St. Paul, Minn	131.4	131.5	128.3	98.6	94.3
Salt Lake City, Utah	144.5	143.4	141.3	97.5	94.6
San Francisco, Calif	147.9	147.3	145.2	99.6	93.8
Savannah, Ga	155.4	157.2	150.9	100.5	96.7
Scranton, Pa	138.7	139.3	138.1	97.5	92.1
Seattle, Wash	142.7	144.2	143.3	101.0	94.5
Springfield, Ill	145.0	144.7	141.1	96.2	94.1
Washington, D. C	140.2	141.5	134.7	97.7	94.1
Wichita, Kans.[3]	148.3	148.7	146.8	97.2	----
Winston-Salem, N. C.[3]	142.6	142.0	137.6	93.7	----

[1] Aggregate costs of 61 foods in each city (54 foods prior to March 1943), weighted to represent total purchases by wage earners and lower-salaried workers, have been combined for the United States with the use of population weights. Primary use is for time-to-time comparisons rather than place-to-place comparisons.
[2] Preliminary.
[3] June 1940=100.

TABLE 5.—*Indexes of Retail Food Prices in 56 Large Cities Combined,*[1] *1913 to October 1945*

[1935-39=100]

Year	All-foods index	Year	All-foods index	Year and month	All-foods index	Year and month	All-foods index
1913	79.9	1929	132.5	*1944*		*1945*	
1914	81.8	1930	126.0				
1915	80.9	1931	103.9	January	136.1	January	137.3
1916	90.8	1932	86.5	February	134.5	February	136.5
1917	116.9	1933	84.1	March	134.1	March	135.9
				April	134.6	April	136.6
1918	134.4	1934	93.7				
1919	149.8	1935	100.4	May	135.5	May	138.8
1920	168.8	1936	101.3	June	135.7	June	141.1
1921	128.3	1937	105.3	July	137.4	July	141.7
1922	119.9	1938	97.8	August	137.7	August	140.9
1923	124.0	1939	95.2	September	137.0	September	139.4
1924	122.8	1940	96.6	October	136.4	October	139.3
1925	132.9	1941	105.5	November	136.5		
1926	137.4	1942	123.9	December	137.4		
1927	132.3	1943	138.0				
1928	130.8	1944	136.1				

[1] Indexes based on 51 cities combined prior to March 1943.

Supplies of Food in Independent Retail Stores, October 1945

SUPPLIES of most meats, butter, margarine and shortening continued to increase from mid-September to mid-October, according to reports from field representatives of the Bureau of Labor Statistics, who visited independent retail stores in 56 large cities. Although pork was as difficult to obtain as at any time during the last 7 months, there was more beef, veal, lamb, and prepared meats.

Beef was still the most plentiful of the fresh meats, with approximately 90 percent of the stores supplied, but pork loins, hams, and bacon were still out of stock in three-fourths of the stores surveyed. Lamb was available in about two-thirds and veal in almost three-fifths of the stores, while in mid-September only about half of the stores had stocks of these two meats. Practically all retailers had frankfurters and bologna.

As in the past 3 months, larger supplies of beef, veal, and lamb were reported from all sections of the country. However, in the Southeastern States, more than half the stores were still out of veal, lamb, and pork. The Rocky Mountain area was the best supplied with all meats except pork, which was easier to obtain in the Midwest than in other regions.

Independent Retail Stores Without Supplies of Specified Foods on September 18 and October 16, 1945, in 56 Large Cities

Commodity	Percent of stores without supplies of specified foods [1]									
	September 18, 1945—56 large cities	October 16, 1945								
		56 large cities	Region [2]							
			I	II	III	IV	V	VI	VII	VIII
Meats:										
Beef, steaks and roasts	14	12	22	10	4	29	31	8	[3] 0	1
Beef, all other	16	10	9	9	7	27	22	4	[3] 0	1
Veal, steaks, chops, and roasts	48	44	76	46	55	57	28	29	14	38
Veal, all other	48	43	84	44	53	64	25	30	9	39
Lamb, chops and roasts	43	35	46	30	39	74	48	36	8	4
Lamb, all other		34	34	32	37	71	39	37	2	6
Pork, loins and hams	71	75	84	74	70	[4] 90	80	69	72	67
Pork, bacon	73	73	68	75	68	90	68	69	73	78
Frankfurters and bologna	5	2	[3] 0	5	1	2	2	[3] 0	[3] 0	[3] 0
Fats and oils:										
Butter	3	2	3	2	1	4	4	2	5	7
Margarine	7	3	6	6	2	1	[3] 0	[3] 0	[3] 0	2
Shortening	37	31	9	35	41	48	40	16	27	26
Lard	34	35	7	48	25	46	51	11	14	38
Cooking and salad oils	34	35	25	41	29	71	41	18	34	20
Sugar, granulated	[5] 26	[5] 37	49	55	38	14	27	28	[3] 0	[3] 0

[1] Data are weighted by the number of independent food stores in each city, to derive regional and all-region percentages.

[2] Regions consist of the following cities: *Region I.*—Boston, Bridgeport, Fall River, Manchester, New Haven, Portland, (Maine), Providence. *Region II.*—Baltimore, Buffalo, Newark, New York, Philadelphia, Pittsburgh, Rochester, Scranton, Washington, D. C. *Region III.*—Cincinnati, Cleveland, Columbus Detroit, Indianapolis, Louisville. *Region IV.*—Atlanta, Birmingham, Charleston (S. C.), Jackson (Miss), Jacksonville, Knoxville, Memphis, Mobile, Norfolk, Richmond, Savannah, Winston-Salem. *Region V.*—Dallas, Houston, Kansas City, (Mo.), Little Rock, New Orleans, St. Louis, Wichita. *Region VI.*—Cedar Rapids, Chicago, Milwaukee, Minneapolis, Omaha, Peoria, St. Paul, Springfield, (Ill.) *Region VII.*—Butte, Denver, Salt Lake City. *Region VIII.*—Los Angeles, Portland (Oreg.), San Francisco, Seattle.

[3] Some size, quality, or variety of the commodity was available in all stores surveyed.

[4] Over 90 percent out of stock.

[5] August 14, 1945, was last date surveyed.

Butter and margarine were available in almost all groceries, and more than two-thirds of the stores had shortening, an increase since mid-September. Lard and cooking and salad oils could be bought in 65 percent of the stores, about the same for the country as a whole as during September. There was an increase in supplies of these foods in the New England and Southwestern States, but in the Rocky Mountain area there was a sharp decrease in the number of stores having stocks.

Sugar was not available in 37 percent of the stores, an increase from 26 percent in August when it was last surveyed. The shortage was confined primarily to the New England and Middle Atlantic States where about half the stores were out of stock. All of the stores surveyed in cities in the Pacific Coast and Rocky Mountain States reported supplies on hand.

Wholesale Prices in October 1945

REVERSING the decline of the preceding 3 months, average primary market prices advanced 0.7 percent in the month of October 1945. The Bureau of Labor Statistics wholesale price index [1] rose to 105.9 percent of the 1926 average, the same level as that of July 1945. This was 1.7 percent above October 1944 and 41.2 percent above the August 1939 level.

Average market prices for farm products rose 2.4 percent and food prices moved up 0.8 percent. The group index for textile products rose 0.9 percent and that for building materials, 0.3 percent. Chemicals and allied products advanced 0.2 percent, and increases of 0.1 percent occurred in the group indexes for fuel and lighting materials, metal and metal products, and housefurnishing goods. Hides and leather products moved down 0.1 percent, while the group index for miscellaneous commodities remained at the level for September.

Average prices for raw materials rose 1.6 percent during October, for semimanufactured articles, 0.3 percent, and for manufactured products, 0.2 percent.

The advance of 2.4 percent in the group index for farm products reflected generally higher prices for agricultural commodities. Grains moved up 2.8 percent on the average, with heavy foreign demand and small crops of some grains. Quotations for oats advanced nearly 10 percent, as buyers substituted them for scarcer grains; wheat prices moved up 3 percent; and smaller increases occurred for other grains. Prices for cattle were substantially higher during the month with late marketing of exceptionally good quality grass-fed animals and continued heavy demand for the better grades. Quotations for hogs which have been at ceiling for some months rose in October under a ceiling increase permitted by OPA. Quotations for sheep were generally higher. Cotton prices moved up to a 20-year peak, with a small crop of low quality and speculative buying. Quotations for apples were higher under increased ceilings. Prices for white potatoes and onions moved up contraseasonally, and eggs

[1] The Bureau of Labor Statistics wholesale price data for the most part represent prices prevailing in the "first commercial transaction." They are prices quoted in primary markets, at principal distribution points.

advanced sharply with their seasonal movement accentuated by a shortage of higher grades and resultant increases in prices of lower-grade eggs. Citrus fruits dropped in price in accordance with their usual seasonal movement.

The advance in 0.8 percent of average prices for foods was due chiefly to the higher prices for eggs and some fresh fruits and vegetables. Higher prices occurred for flour as heavy demand moved quotations toward ceiling. Quotations for dried fruit declined in accordance with lower ceilings established by OPA, which reduced gross margins for processors.

Lower quotations for sheepskins were responsible for the fractional decline in the group index for hides and leather products. Prices for leather and leather products such as shoes were generally unchanged during the month.

The advance of 0.9 percent in the group index for textile products followed price adjustments in September under the Bankhead amendment to the Stabilization Extension Act of 1944. In addition, quotations for artificial leather moved up under higher ceilings granted by the OPA to manufacturers of certain coated fabrics.

Higher sales realizations for gas and electricity were responsible for the advance in the index for fuel and lighting materials. Average prices for petroleum and products fell during the month, reflecting lower monthly average prices in October resulting from the removal in September of wartime ceiling increases on the Eastern seaboard. Competitive below-ceiling prices for Pennsylvania fuel oil and gasoline were reported by some refineries. Monthly average prices for metals and metal products were fractionally higher in October as the result of ceiling-price increases allowed producers of pig iron and some gray-iron castings in September. Quotations for mercury advanced with reduced imports and increased foreign orders.

Average monthly prices for building materials in October were 0.3 percent above those for September, chiefly because of higher ceiling prices for brick and tile allowed by OPA in September. Mill prices for yellow pine lumber rose fractionally as some producers moved to ceiling levels. Ethyl acetate prices were lowered substantially during the month to meet competition from synthetic substitutes selling at lower prices. Quotations for turpentine were fractionally higher and some price increases were reported for builders' hardware.

Quotations for ethyl alcohol advanced during October under higher ceilings permitted by OPA for alcohol made from molasses. Grain alcohol was removed from price control in October, since it was expected that competition from molasses alcohol would act as a price-restraining factor. Quotations for potash moved up with the usual seasonal elimination of discounts. Prices for other chemicals generally were unchanged.

The fractional advance in the group index for housefurnishing goods reflected higher prices for cotton blankets under the Bankhead amendment and price increases for wooden desks under individual ceiling adjustments permitted by OPA.

The rise of 41 percent in average primary market prices over the more than 6 years since the beginning of the European war was due chiefly to substantial increases in prices for agricultural commodities. Farm products were 109 percent above August 1939 levels by October 1945 with the largest increases in prices of grains, which were at

relatively low levels in 1939. The general concentration of price increases in agricultural commodities is indicated by the rise of 75 percent in the group index for raw materials, compared with increases of less than 30 percent for semimanufactured articles and manufactured products. However, some areas in other fields have shown substantial rises over the period. Average prices of cotton goods in October 1945 were more than 90 percent above prewar levels, oils and fats were 2½ times August 1939 prices, and prices of cattle feed had more than doubled. Average prices for lumber were up over 70 percent, with mill prices for some species more than double prewar levels. Contrasted with these increases, however, were very moderate changes in price for a number of basic commodities. Iron and steel and agricultural implements increased less than 5 percent over the period and rayon prices were only 6 percent higher. Cement prices rose less than 10 percent and quotations for structural steel remained unchanged.

Of the 10 major groups of commodities in the index, three showed increases greater than the average for all commodities, farm products, foods, and textile products. Increases for other groups ranged from 32 percent for building materials to less than 13 percent for metals and metal products. On the average, all commodities other than farm products and foods rose only 25 percent over the 6 years.

TABLE 1.—*Indexes of Wholesale Prices by Groups and Subgroups of Commodities, October 1945, Compared with Previous Months*

Groups and subgroups	Indexes (1926=100)				Percent of change to October 1945 from—		
	Oct. 1945	Sept. 1945	Oct. 1944	Aug. 1939	Sept. 1945	Oct. 1944	Aug. 1939
All commodities	105.9	105.2	104.1	75.0	+0.7	+1.7	+41.2
Farm products	127.3	124.3	123.4	61.0	+2.4	+3.2	+108.7
Grains	130.2	126.6	125.1	51.5	+2.8	+4.1	+152.8
Livestock and poultry	130.5	128.5	127.1	66.0	+1.6	+2.7	+97.7
Other farm products	123.6	120.3	119.9	60.1	+2.7	+3.1	+105.7
Foods	105.7	104.9	104.2	67.2	+.8	+1.4	+57.3
Dairy products	110.4	110.3	110.7	67.9	+.1	−.3	+62.6
Cereal products	95.3	95.1	94.7	71.9	+.2	+.6	+32.5
Fruits and vegetables	116.3	117.5	112.7	58.5	−1.0	+3.2	+98.8
Meats	107.9	107.9	106.0	73.7	0	+1.8	+46.4
Other foods	98.5	94.9	96.8	60.3	+3.8	+1.8	+63.3
Hides and leather products	118.6	118.7	116.2	92.7	−.1	+2.1	+27.9
Shoes	126.3	126.3	126.3	100.8	0	0	+25.3
Hides and skins	117.6	118.1	107.3	77.2	−.4	+9.6	+52.3
Leather	103.8	103.8	101.3	84.0	0	+2.5	+23.6
Other leather products	115.2	115.2	115.2	97.1	0	0	+18.6
Textile products	101.0	100.1	99.4	67.8	+.9	+1.6	+49.0
Clothing	107.4	107.4	107.4	81.5	0	0	+31.8
Cotton goods	125.0	121.3	118.8	65.5	+3.1	+5.2	+90.8
Hosiery and underwear	71.5	71.5	71.5	61.5	0	0	+16.3
Rayon	30.2	30.2	30.3	28.5	0	−.3	+6.0
Silk				44.3			
Woolen and worsted	112.7	112.7	112.9	75.5	0	−.2	+49.3
Other textile products	101.4	101.3	100.9	63.7	+.1	+.5	+59.2
Fuel and lighting materials	84.2	84.1	82.9	72.6	+.1	+1.6	+16.0
Anthracite	102.2	102.2	95.2	72.1	0	+7.4	+41.7
Bituminous coal	124.8	124.7	120.5	96.0	+.1	+3.6	+30.0
Coke	134.9	134.9	130.7	104.2	0	+3.2	+29.5
Electricity	(1)	(1)	59.6	75.8			
Gas	(1)	80.2	76.0	86.7			
Petroleum and products	62.1	62.6	63.8	51.7	−.8	−2.7	+20.1

[1] No quotation.

TABLE 1.—*Indexes of Wholesale Prices by Groups and Subgroups of Commodities, October 1945, Compared with Previous Months*—Continued

Groups and subgroups	Indexes (1926=100)				Percent of change to October 1945 from—		
	Oct. 1945	Sept. 1945	Oct. 1944	Aug. 1939	Sept. 1945	Oct. 1944	Aug. 1939
Metals and metal products	105.0	104.9	103.7	93.2	+0.1	+1.3	+12.7
Agricultural implements	97.9	97.9	97.5	93.5	0	+.4	+4.7
Farm machinery	98.9	98.9	98.6	94.7	0	+.3	+4.4
Iron and steel	99.8	99.6	97.1	95.1	+.2	+2.8	+4.9
Motor vehicles	112.8	112.8	112.8	92.5	0	0	+21.9
Nonferrous metals	85.7	85.7	85.8	74.6	0	−.1	+14.9
Plumbing and heating	95.0	95.0	92.4	79.3	0	+2.8	+19.8
Building materials	118.3	118.0	116.3	89.6	+.3	+1.7	+32.0
Brick and tile	115.2	112.4	104.8	90.5	+2.5	+9.9	+27.3
Cement	99.9	99.6	97.5	91.3	+.3	+2.5	+9.4
Lumber	155.2	155.0	154.2	90.1	+.1	+.6	+72.3
Paint and paint materials	107.6	107.6	106.0	82.1	0	+1.5	+31.1
Plumbing and heating	95.0	95.0	92.4	79.3	0	+2.8	+19.8
Structural steel	107.3	107.3	107.3	107.3	0	0	0
Other building materials	104.6	104.5	103.3	89.5	+.1	+1.3	+16.9
Chemicals and allied products	95.5	95.3	95.0	74.2	+.2	+.5	+28.7
Chemicals	96.4	96.1	96.0	83.8	+.3	+.4	+15.0
Drugs and pharmaceuticals	110.3	110.2	106.9	77.1	+.1	+3.2	+43.1
Fertilizer material	81.9	81.1	81.8	65.5	+1.0	+.1	+25.0
Mixed fertilizers	86.6	86.6	86.6	73.1	0	0	+18.5
Oils and fats	102.0	102.0	102.0	40.6	0	0	+151.2
Housefurnishing goods	104.7	104.6	104.4	85.6	+.1	+.3	+22.3
Furnishings	107.9	107.7	107.4	90.0	+.2	+.5	+19.9
Furniture	101.6	101.5	101.4	81.1	+.1	+.2	+25.3
Miscellaneous	94.8	94.8	93.6	73.3	0	+1.3	+29.3
Auto tires and tubes	73.0	73.0	73.0	60.5	0	0	+20.7
Cattle feed	159.6	159.6	159.6	68.4	0	0	+133.3
Paper and pulp	109.3	109.3	107.2	80.0	0	+2.0	+36.6
Rubber, crude	46.2	46.2	46.2	34.9	0	0	+32.4
Other miscellaneous	98.9	98.9	97.0	81.3	0	+2.0	+21.6
Raw materials	116.6	114.8	113.2	66.5	+1.6	+3.0	+75.3
Semimanufactured articles	96.8	96.5	94.8	74.5	+.3	+2.1	+29.9
Manufactured products	101.9	101.7	101.0	79.1	+.2	+.9	+28.8
All commodities other than farm products	101.0	100.9	99.8	77.9	+.1	+1.2	+29.7
All commodities other than farm products and foods	100.1	99.8	98.7	80.1	+.3	+1.4	+25.0

Index Numbers by Commodity Groups, 1926 to October 1945

Index numbers of wholesale prices by commodity groups for selected years from 1926 to 1944, and by months from October 1944 to October 1945, are shown in table 2.

TABLE 2.—*Index Numbers of Wholesale Prices by Groups of Commodities*

[1926=100]

Year and month	Farm products	Foods	Hides and leather products	Textile products	Fuel and lighting materials	Metals and metal products	Building materials	Chemicals and allied products	House-furnishing goods	Miscellaneous	All commodities
1926	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1929	104.2	99.9	109.1	90.4	83.0	100.5	95.4	94.0	94.3	82.6	95.3
1932	48.2	61.0	72.9	54.9	70.3	80.2	71.4	73.9	75.1	64.4	64.8
1933	51.4	60.5	80.9	64.8	66.3	79.8	77.0	72.1	75.8	62.5	65.9
1936	80.9	82.1	95.4	71.5	76.2	87.0	86.7	78.7	81.7	70.5	80.8
1937	86.4	85.5	104.6	76.3	77.6	95.7	95.2	82.6	89.7	77.8	86.3
1938	68.5	73.6	92.8	66.7	76.5	95.7	90.3	77.0	86.8	73.3	78.6
1939	65.3	70.4	95.6	69.7	73.1	94.4	90.5	76.0	86.3	74.8	77.1
1940	67.7	71.3	100.8	73.8	71.7	95.8	94.8	77.0	88.5	77.3	78.6
1941	82.4	82.7	108.3	84.8	76.2	99.4	103.2	84.4	94.3	82.0	87.3
1942	105.9	99.6	117.7	96.9	78.5	103.8	110.2	95.5	102.4	89.7	98.8
1943	122.6	106.6	117.5	97.4	80.8	103.8	111.4	94.9	102.7	92.2	103.1
1944	123.3	104.9	116.7	98.4	83.0	103.8	115.5	95.2	104.3	93.6	104.0
1944											
October	123.4	104.2	116.2	99.4	82.9	103.7	116.3	95.0	104.4	93.6	104.1
November	124.4	105.1	116.2	99.4	83.1	103.7	116.4	94.8	104.4	94.0	104.4
December	125.5	105.5	117.4	99.5	83.1	103.8	116.4	94.8	104.4	94.2	104.7
1945											
January	126.2	104.7	117.5	99.6	83.3	104.0	116.8	94.9	104.5	94.2	104.9
February	127.0	104.7	117.6	99.7	83.3	104.2	117.0	94.9	104.5	94.6	105.2
March	127.2	104.6	117.8	99.7	83.4	104.2	117.1	94.9	104.5	94.6	105.3
April	129.0	105.8	117.9	99.6	83.5	104.2	117.1	94.9	104.5	94.8	105.7
May	129.9	107.0	117.9	99.6	83.7	104.3	117.3	94.9	104.5	94.8	106.0
June	130.4	107.5	118.0	99.6	83.9	104.7	117.4	95.0	104.5	94.8	106.1
July	129.0	106.9	118.0	99.6	84.3	104.7	117.5	95.3	104.5	94.8	105.9
August	126.9	106.4	118.0	99.6	84.8	104.7	117.8	95.3	104.5	94.8	105.7
September	124.3	104.9	118.7	100.1	84.1	104.9	118.0	95.3	104.6	94.8	105.2
October	127.3	105.7	118.6	101.0	84.2	105.0	118.3	95.5	104.7	94.8	105.9

Index Numbers by Commodity Groups, 1926 to October 1945

The price trend for specified years and months since 1926 is shown in table 3 for the following groups of commodities: Raw materials, semimanufactured articles, manufactured products, commodities other than farm products, and commodities other than farm products and foods. The list of commodities included under the classifications "Raw materials" "Semimanufactured articles," and "Manufactured products" was shown on pages 10 and 11 of Wholesale Prices, July–December and Year 1943, Bulletin No. 785.

TABLE 3.—*Index Numbers of Wholesale Prices by Special Groups of Commodities*

[1926=100]

Year	Raw materials	Semimanufactured articles	Manufactured products	All commodities other than farm products	All commodities other than farm products and foods
1926	100.0	100.0	100.0	100.0	100.0
1929	97.5	93.9	94.5	93.3	91.6
1932	55.1	59.3	70.3	68.3	70.2
1933	56.5	65.4	70.5	69.0	71.2
1936	79.9	75.9	82.0	80.7	79.6
1937	84.8	85.3	87.2	86.2	85.3
1938	72.0	75.4	82.2	80.6	81.7
1939	70.2	77.0	80.4	79.5	81.3
1940	71.9	79.1	81.6	80.8	83.0
1941	83.5	86.9	89.1	88.3	89.0
1942	100.6	92.6	98.6	97.0	95.5
1943	112.1	92.9	100.1	98.7	96.9
1944	113.2	94.1	100.8	99.6	98.5

Year and month	Raw materials	Semimanufactured articles	Manufactured products	All commodities other than farm products	All commodities other than farm products and foods
1944					
October	113.2	94.8	101.0	99.8	98.7
November	113.8	94.8	101.1	99.9	98.8
December	114.6	94.8	101.1	100.0	98.9
1945					
January	115.1	94.9	101.3	100.1	99.1
February	115.6	95.0	101.5	100.2	99.2
March	115.7	95.0	101.6	100.4	99.2
April	116.8	95.0	101.8	100.5	99.3
May	117.7	95.0	101.8	100.6	99.4
June	118.2	95.4	101.8	100.7	99.6
July	117.5	95.3	101.8	100.7	99.7
August	116.3	95.5	101.8	100.9	99.9
September	114.8	96.5	101.7	100.9	99.8
October	116.6	96.8	101.9	101.0	100.1

Weekly Fluctuations

Weekly changes in wholesale prices by groups of commodities during September and October 1945 are shown by the index numbers in table 4. These indexes are not averaged to obtain an index for the month but are computed only to indicate the fluctuations from week to week.

TABLE 4.—*Weekly Index Numbers of Wholesale Prices by Commodity Groups, September and October 1945*

[1926=100]

Commodity group	Oct. 27	Oct. 20	Oct. 13	Oct. 6	Sept. 29	Sept. 22	Sept. 15	Sept. 8	Sept. 1
All commodities	105.7	105.5	105.3	105.2	105.0	104.9	104.7	105.0	105.2
Farm products	127.7	126.9	126.3	125.7	124.7	124.5	123.6	124.3	125.1
Foods	106.0	105.8	105.2	105.3	104.7	105.1	104.6	105.1	105.5
Hides and leather products	119.1	119.1	118.4	118.4	118.6	118.6	118.6	118.6	118.6
Textile products	99.9	99.9	99.9	99.9	99.9	99.6	99.4	99.4	99.1
Fuel and lighting materials	84.7	84.5	84.5	84.5	84.4	84.5	84.4	85.3	85.5
Metals and metal products	105.2	105.1	104.8	104.8	104.8	104.8	104.8	104.8	104.8
Building materials	118.1	118.1	118.0	117.9	117.8	117.7	117.7	117.6	117.6
Chemicals and allied products	95.5	95.5	95.3	95.3	95.3	95.3	95.3	95.3	95.3
Housefurnishing goods	106.3	106.3	106.3	106.3	106.3	106.3	106.3	106.3	106.2
Miscellaneous	94.6	94.6	94.6	94.6	94.6	94.6	94.6	94.6	94.6
Raw materials	117.4	116.9	116.6	116.3	115.7	115.5	115.0	115.3	115.8
Semimanufactured articles	96.7	96.6	95.9	95.9	95.9	95.7	95.7	95.7	95.4
Manufactured products	101.9	101.9	101.9	101.8	101.8	101.8	101.8	102.0	102.1
All commodities other than farm products	100.8	100.8	100.7	100.7	100.6	100.6	100.6	100.8	100.8
All commodities other than farm products and foods	100.1	100.1	100.0	100.0	99.9	99.9	99.8	100.1	100.1

Labor Turn-over

Labor Turn-over in Manufacturing, Mining, and Public Utilities, September 1945

SEPARATIONS in manufacturing during September were much lower than in August, as lay-offs were reduced and reconversion hiring got under way. Gross separations dropped from 2.4 million workers in August to 1.4 million in September, and accessions increased sharply. Lay-offs continued high in plants making ordnance, and ships and planes.

The accession rate for all manufacturing jumped from 59 per 1,000 in August to 73 in September, the highest since June 1944. This reflected, chiefly, a 40-percent rise in the hiring rate for the munitions industries. Many munitions plants had completed reconversion and were ready to produce new products, while workers were rehired by some war plants which laid off large numbers in August, only to find that they still had contracts to complete. Among the munitions groups, only petroleum, retarded by strikes in oil refineries, failed to show an increase in the rate of hiring.

Accessions for the nonmunitions industries increased during the month from 80 to 86 per 1,000, reflecting slight rises in all but the lumber, food, and paper groups.

Forty-one workers per 1,000 were laid off in September, as compared with 107 in August, when the peak of lay-offs incident to the ending of the war was reached. In the munitions group of industries, the rate of lay-offs dropped from 171 to 70 per 1,000 over the month. Lay-off rates were cut almost in half in both the ordnance and transportation-equipment groups, but still continued high—239 and 160 per 1,000, respectively. Explosives, with 404 lay-offs per 1,000, had the highest rate for any single industry. Among the nonmunitions groups, increased lay-offs were reported in lumber where strikes were in progress, and in the stone, clay, and glass, and leather groups.

A moderate rise in the rate of quits, which appeared in both the munitions and nonmunitions groups, raised the level for all manufacturing to the new high of 65 per 1,000. Workers quit at the rate of 102 per 1,000 in the transportation-equipment group, many of these quits being in anticipation of lay-offs.

Women were laid off or discharged from their jobs at a faster rate than men—72 per 1,000 as against 42 per 1,000—and they were also resigning at a more rapid rate.

TABLE 1.—*Monthly Labor Turn-over Rates (per 100 Employees) in Manufacturing Industries* [1]

Class of turn-over and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Total separation:												
1945	6.2	6.0	6.8	6.6	7.0	7.9	7.7	17.9	[2] 11.4			
1944	6.7	6.6	7.4	6.8	7.1	7.1	6.6	7.8	7.6	6.4	6.0	5.7
1943	7.1	7.1	7.7	7.5	6.7	7.1	7.6	8.3	8.1	7.0	6.4	6.4
1939	3.2	2.6	3.1	3.5	3.5	3.3	3.3	3.0	2.8	2.9	3.0	3.3
Quit:												
1945	4.6	4.3	5.0	4.8	4.8	5.1	5.2	6.2	[2] 6.5			
1944	4.6	4.6	5.0	4.9	5.3	5.4	5.0	6.2	6.1	5.0	4.6	4.7
1943	4.5	4.7	5.4	5.4	4.8	5.2	5.6	6.3	6.3	5.2	4.5	4.4
1939	.9	.6	.8	.8	.7	.7	.7	.8	1.1	.9	.8	.7
Discharge:												
1945	.7	.7	.7	.6	.6	.7	.6	.7	[2] .6			
1944	.7	.6	.7	.6	.6	.7	.7	.7	.6	.6	.6	.6
1943	.5	.5	.6	.5	.6	.6	.7	.7	.6	.6	.6	.6
1939	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2
Lay-off: [3]												
1945	.6	.7	.7	.8	1.2	1.7	1.5	10.7	[2] 4.1			
1944	.8	.8	.9	.6	.5	.5	.5	.5	.6	.5	.5	.5
1943	.7	.5	.5	.6	.5	.5	.5	.5	.5	.5	.7	1.0
1939	2.2	1.9	2.2	2.6	2.7	2.5	2.5	2.1	1.6	1.8	2.0	2.7
Military and miscellaneous: [4]												
1945	.3	.3	.4	.4	.4	.4	.4	.3	[2] .2			
1944	.6	.6	.8	.7	.7	.5	.4	.4	.3	.3	.3	.3
1943	1.4	1.4	1.2	1.0	.8	.8	.8	.8	.7	.7	.6	.6
Accession:												
1945	7.0	5.0	4.9	4.7	5.0	5.9	5.8	5.9	[2] 7.3			
1944	6.5	5.5	5.8	5.5	6.4	7.6	6.3	6.3	6.1	6.0	6.1	5.1
1943	8.3	7.9	8.3	7.4	7.2	8.4	7.8	7.6	7.7	7.2	6.6	5.2
1939	4.1	3.1	3.3	2.9	3.3	3.9	4.2	5.1	6.2	5.9	4.1	2.8

[1] Month-to-month employment changes as indicated by labor turn-over rates are not precisely comparable to those shown by the Bureau's employment and pay-roll reports, as the former are based on data for the entire month while the latter refer, for the most part, to a 1-week period ending nearest the middle of the month. In addition, labor turn-over data, beginning in January 1943, refer to all employees, whereas the employment and pay-roll reports relate only to wage earners. The labor turn-over sample is not so extensive as that of the employment and pay-roll survey—proportionately fewer small plants are included; printing and publishing, and certain seasonal industries, such as canning and preserving, are not covered.

[2] Preliminary.

[3] Including temporary, indeterminate, and permanent lay-offs.

[4] Miscellaneous separations comprise not more than 0.1 in these figures. In 1939 these data were included with quits.

TABLE 2.—*Monthly Labor Turn-over Rates (per 100 Employees) in Selected Groups and Industries,* [1] *September 1945* [2]

Industry	Total separation		Quit		Discharge		Lay-off		Military and miscellaneous		Total accession	
	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug
Manufacturing												
Munitions [3]	13.6	23.8	5.8	5.5	0.6	0.9	7.0	17.1	0.2	0.3	6.0	4.2
Nonmunitions [3]	9.1	10.1	7.2	7.1	.5	.5	1.2	2.3	.2	.2	8.6	8.0
Ordnance	30.0	48.4	4.9	5.6	1.0	1.1	23.9	41.5	.2	.2	6.9	3.5
Guns, howitzers, mortars, and related equipment	19.3	31.2	3.9	6.3	.4	.5	14.8	24.1	.2	.3	6.5	3.6
Ammunition, except for small arms	32.8	52.8	5.4	6.0	1.4	1.3	25.9	45.3	.1	.2	7.3	3.3
Tanks	33.0	47.0	3.5	3.6	.2	.4	29.2	42.7	.1	.3	6.6	7.4
Sighting and fire-control equipment	29.8	38.5	3.7	3.0	.4	.4	25.4	35.0	.3	.1	4.7	2.2
Iron and steel and their products	8.1	10.8	5.2	4.6	.5	.5	2.2	5.4	.2	.3	6.4	4.7
Blast furnaces, steel works, and rolling mills	6.5	6.6	4.6	3.7	.2	.2	1.5	2.4	.2	.3	5.6	3.7
Gray-iron castings	11.5	16.6	7.9	6.7	1.1	1.2	2.3	8.4	.2	.3	9.8	9.8
Malleable-iron castings	7.8	9.0	6.5	5.7	.5	.5	.6	2.2	.2	.6	7.6	5.7
Steel castings	9.0	12.6	5.3	6.4	.8	1.1	2.7	4.7	.2	.4	4.5	4.2
Cast-iron pipe and fittings	5.8	14.0	4.2	4.3	.3	.4	1.0	8.3	.3	1.0	3.8	7.4
Tin cans and other tinware	17.9	20.6	12.6	9.3	3.5	3.1	1.3	8.0	.5	.2	12.7	11.5

See footnotes at end of table.

TABLE 2.—*Monthly Labor Turn-over Rates (per 100 Employees) in Selected Groups and Industries,*[1] *September 1945* [2]—Continued

Industry	Total separation		Quit		Discharge		Lay-off		Military and miscellaneous		Total accession	
	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug
Manufacturing—Continued												
Iron and steel and their products—Con.												
Wire products	7.5	11.0	4.0	4.4	0.2	0.3	3.0	6.0	0.3	0.3	4.6	4.0
Cutlery and edge tools	7.3	9.3	5.6	5.8	1.1	1.4	.4	1.9	.2	.2	8.3	4.7
Tools (except edge tools, machine tools, files, and saws)	6.8	9.5	4.9	5.5	.5	.7	1.2	3.2	.2	.1	7.3	4.5
Hardware	8.1	7.1	6.2	5.3	.6	.6	1.2	.9	.1	.3	8.7	6.8
Stoves, oil burners, and heating equipment	10.7	14.4	6.7	7.7	1.0	1.0	2.7	5.4	.3	.3	10.7	12.4
Steam and hot-water heating apparatus and steam fittings	8.5	9.2	5.6	3.8	.8	.3	1.9	4.8	.2	.3	5.5	3.0
Stamped and enameled ware and galvanizing	11.2	18.6	7.0	7.5	.8	1.0	3.2	9.9	.2	.2	9.6	8.7
Fabricated structural-metal products	10.8	22.7	5.5	6.0	.7	.6	4.3	15.6	.3	.5	7.1	7.1
Bolts, nuts, washers, and rivets	8.4	12.2	3.8	4.1	.4	.7	4.0	7.1	.2	.3	5.2	3.3
Forgings, iron and steel	11.1	17.9	4.3	4.5	.4	.5	6.3	12.7	.1	.2	3.9	2.9
Firearms (60 caliber and under)	16.7	40.4	2.7	1.8	.2	.5	13.6	37.9	.2	.2	13.4	4.6
Electrical machinery	13.4	20.1	4.6	4.6	.5	.6	8.0	14.6	.3	.3	5.2	3.5
Electrical equipment for industrial use	12.7	10.7	4.8	4.5	.3	.5	7.3	5.4	.3	.3	3.2	3.4
Radios, radio equipment, and phonographs	13.6	26.7	4.1	4.4	.6	.6	8.6	21.4	.3	.3	5.4	2.8
Communication equipment, except radios	19.8	22.9	4.6	4.1	.5	.8	14.5	17.6	.2	.4	3.6	2.3
Machinery, except electrical	7.8	13.3	4.4	4.7	.6	.9	2.6	7.4	.2	.3	5.1	4.0
Engines and turbines	11.9	24.2	5.3	5.1	.7	.8	5.6	18.0	.3	.3	4.1	3.1
Agricultural machinery and tractors	6.9	12.5	4.8	5.3	.4	1.0	1.4	5.7	.3	.5	6.0	4.8
Machine tools	6.3	11.7	3.4	3.6	.4	.9	2.3	6.9	.2	.3	3.5	2.2
Machine-tool accessories	10.0	13.2	3.6	3.9	.7	.9	5.5	8.1	.2	.3	3.8	3.0
Metalworking machinery and equipment, not elsewhere classified	5.5	7.7	4.2	4.2	.9	.8	.3	2.5	.1	.2	6.5	5.2
General industrial machinery, except pumps	8.4	14.5	4.5	4.8	.5	.8	3.2	8.6	.2	.3	4.8	4.0
Pumps and pumping equipment	5.9	17.9	4.1	5.5	.4	1.5	1.1	10.6	.3	.3	7.9	4.0
Transportation equipment, except automobiles	27.5	38.4	10.2	7.2	1.1	1.1	16.0	29.8	.2	.3	6.2	4.0
Aircraft	31.0	51.1	7.7	5.7	.4	.5	22.8	44.6	.1	.3	4.5	1.9
Aircraft parts, including engines	26.2	45.0	4.2	3.7	.3	.4	21.5	40.7	.2	.2	9.3	3.4
Shipbuilding and repairs	28.2	30.1	12.5	9.7	1.6	1.9	13.9	18.1	.2	.4	6.0	5.4
Automobiles	9.0	16.2	3.1	3.3	.2	.4	5.6	12.3	.1	.2	7.1	4.8
Motor vehicles, bodies, and trailers	7.3	9.6	2.3	2.3	.1	.2	4.8	6.9	.1	.2	5.4	3.5
Motor-vehicle parts and accessories	11.5	25.1	4.2	4.6	.4	.7	6.7	19.6	.2	.2	9.8	6.7
Nonferrous metals and their products [4]	10.5	18.8	6.0	5.5	.7	1.5	3.5	11.5	.3	.3	8.0	5.4
Primary smelting and refining, except aluminum and magnesium	5.4	4.1	4.4	3.4	.2	.3	.5	.2	.3	.2	4.7	3.9
Aluminum and magnesium smelting and refining	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Rolling and drawing of copper and copper alloys	7.3	6.8	4.2	4.5	.3	.7	2.6	1.4	.2	.2	4.6	3.6
Aluminum and magnesium products	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Lighting equipment	9.8	9.9	8.5	7.2	.5	.7	.7	1.9	.1	.1	12.9	9.9
Nonferrous-metal foundries, except aluminum and magnesium	12.6	17.9	6.1	5.8	.9	.8	5.2	11.0	.4	.3	7.0	5.5
Lumber and timber basic products	12.8	13.2	9.2	10.1	.7	.5	2.7	2.4	.2	.2	10.3	11.2
Sawmills	12.2	11.7	9.9	9.9	.4	.3	1.7	1.3	.2	.2	9.8	9.9
Planing and plywood mills	13.0	15.7	6.2	9.1	1.4	.9	5.2	5.6	.2	.1	8.6	12.8
Furniture and finished lumber products	10.9	14.1	8.5	8.9	.7	.9	1.5	4.0	.2	.3	11.2	10.1
Furniture, including mattresses and bedsprings	11.5	13.6	8.8	9.0	.7	1.1	1.8	3.2	.2	.3	12.0	10.9
Stone, clay, and glass products	8.5	8.3	5.7	5.6	.5	.6	2.0	1.8	.3	.3	7.8	6.8
Glass and glass products	7.7	8.3	5.2	5.3	.6	.8	1.6	1.8	.3	.4	9.0	6.7
Cement	6.5	5.4	5.3	4.4	.4	.5	.5	.3	.3	.2	9.9	11.2
Brick, tile, and terra cotta	9.6	8.8	7.5	7.8	.7	.5	1.2	.2	.2	.3	10.0	10.5
Pottery and related products	8.0	7.2	6.9	6.1	.4	.4	.5	.4	.2	.3	7.4	7.2

See footnotes at end of table.

TABLE 2.—*Monthly Labor Turn-over Rates (per 100 Employees) in Selected Groups and Industries,*[1] *September 1945*[2]—Continued

Industry	Total separation		Quit		Discharge		Lay-off		Military and miscellaneous		Total accession	
	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug
Manufacturing—Continued												
Textile-mill products	7.9	7.7	6.6	6.0	0.4	0.5	0.7	1.0	0.2	0.2	7.5	6.4
Cotton	9.1	8.3	8.0	7.1	.5	.6	.4	.4	.2	.2	8.2	7.6
Silk and rayon goods	8.4	7.5	6.8	6.1	.5	.6	1.0	.6	.1	.2	7.9	7.2
Woolen and worsted, except dyeing and finishing	5.7	5.0	4.4	3.8	.4	.3	.7	.6	.2	.3	6.1	4.1
Hosiery, full-fashioned	4.7	4.1	3.7	3.5	.2	.1	.7	.4	.1	.1	5.8	4.7
Hosiery, seamless	7.3	6.7	6.2	5.9	.2	.2	.8	.5	.1	.1	7.9	6.1
Knitted underwear	7.0	7.5	5.9	5.7	.3	.4	.7	1.3	.1	.1	7.0	4.6
Dyeing and finishing textiles, including woolen and worsted	5.4	5.8	3.9	3.7	.5	.5	.8	1.4	.2	.2	5.6	4.1
Apparel and other finished textile products	7.4	9.1	6.3	5.5	.3	.3	.8	3.2	(5)	.1	7.1	5.7
Men's and boys' suits, coats, and overcoats	5.5	5.8	4.5	3.9	.2	.1	.8	1.7	(5)	.1	5.2	3.7
Men's and boys' furnishings, work clothing, and allied garments	7.0	8.3	6.1	6.1	.2	.3	.7	1.8	(5)	.1	7.4	6.3
Leather and leather products	7.9	7.1	6.3	5.8	.3	.3	1.2	.7	.1	.3	7.0	6.3
Leather	6.2	4.9	5.4	4.0	.3	.3	.3	.4	.2	.2	6.0	5.7
Boots and shoes	8.3	7.3	6.5	6.0	.3	.3	1.4	.7	.1	.3	7.2	6.4
Food and kindred products	10.3	10.9	8.5	9.2	.8	.7	.8	.8	.2	.2	10.4	10.8
Meat products	9.7	10.3	7.9	8.8	.8	.6	.7	.6	.3	.3	9.9	10.4
Grain-mill products	15.7	14.8	14.0	12.5	.6	1.3	.6	.7	.5	.3	12.8	15.8
Tobacco manufactures	8.8	8.8	8.0	7.9	.4	.5	.3	.3	.1	.1	12.3	12.1
Paper and allied products	8.8	9.6	7.4	8.0	.7	.7	.3	.6	.4	.3	9.0	9.3
Paper and pulp	7.7	9.0	6.4	7.3	.6	.7	.3	.6	.4	.4	8.0	8.7
Paper boxes	11.6	11.5	10.2	9.9	.8	.9	.4	.4	.2	.3	12.3	11.7
Chemicals and allied products	12.8	21.1	4.8	5.2	.5	.6	7.3	15.0	.2	.3	5.5	4.1
Paints, varnishes, and colors	5.3	5.1	4.1	3.8	.6	.8	.4	.3	.2	.2	8.6	5.5
Rayon and allied products	5.8	5.7	5.3	4.9	.3	.4	.1	.1	.1	.3	8.0	5.4
Industrial chemicals, except explosives	6.9	6.5	4.7	4.6	.6	.7	1.4	.9	.2	.3	5.6	5.5
Explosives	46.1	39.2	4.8	7.5	.3	.9	40.4	30.4	.6	.4	1.6	2.0
Small-arms ammunition	23.2	53.0	4.6	4.3	.4	.5	18.1	47.9	.1	.3	3.6	1.5
Products of petroleum and coal	4.0	4.6	2.9	3.3	.3	.4	.6	.7	.2	.2	3.9	4.3
Petroleum refining	3.8	4.5	2.8	3.2	.2	.3	.6	.8	.2	.2	3.7	4.1
Rubber products	8.8	11.5	6.3	6.7	.4	.5	1.5	3.8	.6	.5	7.4	5.9
Rubber tires and inner tubes	8.7	9.6	6.0	6.6	.3	.4	1.6	2.0	.8	.6	6.8	6.4
Rubber footwear and related products	8.4	11.3	7.3	8.5	.3	.2	.5	2.4	.3	.2	7.5	5.0
Miscellaneous rubber industries	8.9	15.1	6.5	6.2	.6	.9	1.5	7.7	.3	.3	8.7	5.4
Miscellaneous industries	11.3	14.8	4.7	3.8	.4	.4	6.0	10.3	.2	.3	4.7	3.9
Nonmanufacturing												
Metal mining	6.5	6.6	5.4	5.5	.3	.3	.5	.3	.3	.5	5.3	4.5
Iron ore	3.9	2.8	3.1	2.3	.1	.1	.3	.1	.4	.3	2.5	2.0
Copper ore	7.8	8.4	6.8	7.4	.5	.3	.2	(6)	.3	.7	6.3	5.0
Lead and zinc ore	6.8	8.0	5.9	6.9	.3	.3	.3	.3	.3	.5	6.1	5.8
Metal mining, not elsewhere classified, including aluminum ore	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Coal mining:												
Anthracite	2.1	1.9	1.6	1.2	(6)	(6)	.4	.6	.1	.1	2.4	1.7
Bituminous coal	4.9	4.6	4.5	4.2	.2	.2	.1	.1	.1	.1	4.8	4.8
Public utilities:												
Telephone	4.4	3.9	3.9	3.4	.2	.2	.2	.2	.1	.1	4.8	4.3
Telegraph	4.5	4.2	4.2	3.9	.1	.1	.1	.1	.1	.1	5.6	4.5

[1] Since January 1943 manufacturing firms reporting labor turn-over have been assigned industry codes on the basis of current products. Most plants in the employment and pay-roll sample, comprising those which were in operation in 1939, are classified according to their major activity at that time, regardless of any subsequent change in major products.

[2] Preliminary figures.

[3] Comparable data for 1943 and 1944 are presented in the July issue of the Monthly Labor Review.

[4] September figures based on incomplete returns. [5] Not available. [6] Less than 0.05.

TABLE 3.—*Monthly Labor Turn-over Rates (per 100 Employees) for Men and Women in All Manufacturing and Selected Groups,[1] September 1945 [2]*

Industry	Total separation				Quit				Accession			
	Men		Women		Men		Women		Men		Women	
	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug	Sept	Aug
All manufacturing	10.2	14.6	14.6	24.8	6.0	5.8	7.4	6.9	7.2	5.9	7.4	5.7
Munitions [3]	11.6	18.1	22.0	38.9	5.4	5.2	6.9	6.2	6.1	4.3	5.8	3.8
Nonmunitions [3]	6.0	9.1	9.9	11.5	4.7	6.8	7.8	7.5	5.9	8.4	8.5	7.5
Ordnance	25.2	39.2	44.0	66.9	4.3	5.8	8.0	5.3	6.2	3.6	8.6	2.9
Iron and steel and their products	7.5	9.6	12.4	19.1	5.0	4.4	7.1	6.7	6.7	4.8	6.7	5.3
Electrical machinery	9.7	12.0	18.8	29.6	3.8	3.7	5.7	5.5	4.2	2.9	6.6	4.0
Machinery, except electrical	6.6	11.7	12.5	19.7	4.1	4.4	5.9	6.2	5.3	4.0	4.3	4.0
Transportation equipment, except automobiles	26.4	31.3	35.7	52.8	10.5	7.4	8.8	6.5	6.5	4.4	4.8	3.2
Automobiles	7.3	10.6	16.4	27.8	2.8	3.0	5.5	5.1	6.2	3.7	8.0	4.3
Nonferrous metals and their products [4]	9.5	16.2	13.9	27.6	6.0	5.3	6.0	6.5	8.3	5.3	6.9	6.0
Lumber and timber basic products	12.2	11.8	16.7	23.7	8.9	9.8	10.2	11.5	9.9	11.1	10.7	11.6
Furniture and finished lumber products	9.3	11.1	15.7	21.8	7.2	7.5	12.3	12.5	10.6	9.8	12.7	10.7
Stone, clay, and glass products	7.3	7.0	11.8	12.0	5.1	5.0	7.3	7.4	7.9	6.9	7.3	6.6
Textile-mill products	7.5	6.8	8.2	8.3	6.3	5.3	6.9	6.5	7.4	6.2	7.6	6.4
Apparel and other finished textile products	6.2	7.8	7.5	9.0	4.7	3.5	6.4	5.6	4.5	3.6	7.4	5.9
Leather and leather products	6.3	5.2	9.8	9.1	4.9	3.8	8.0	7.9	6.1	4.9	8.1	7.8
Food and kindred products	9.3	10.1	12.8	12.9	7.9	8.5	10.3	10.7	10.1	11.0	11.3	10.5
Tobacco manufactures	8.2	7.1	9.2	9.8	6.7	5.9	8.6	8.9	13.8	11.0	11.2	12.6
Paper and allied products	7.9	8.7	10.5	11.4	6.7	7.3	9.1	9.4	9.0	9.1	8.2	9.5
Chemicals and allied products	10.8	16.8	18.8	30.9	4.4	4.6	5.7	6.5	5.7	4.3	5.0	3.6
Products of petroleum and coal	3.4	4.3	8.2	7.5	2.6	3.0	5.9	5.6	4.1	4.2	2.1	3.3
Rubber products	7.5	9.4	11.8	15.8	5.7	6.7	7.6	7.2	7.9	6.6	6.3	4.6
Miscellaneous industries	8.7	9.4	14.7	18.7	3.8	2.8	5.9	5.1	4.1	3.3	5.5	4.7

[1] These figures are based on a slightly smaller sample than that for all employees, inasmuch as some firms do not report separate data for women.
[2] Preliminary figures.
[3] Comparable data for 1944 are presented in the July issue of the Monthly Labor Review.
[4] Figures based on incomplete returns.

Building Operations

Building Construction in Urban Areas, October 1945

URBAN building construction started in October 1945 experienced not only a contraseasonal gain but also the greatest percentage increase of any month this year. Total valuations for the month approximated 262 million dollars, as compared with 192 million dollars in September. While both Federally and non-Federally financed work increased during the month, the high level reached by building construction as a whole is attributable entirely to a surge in private activity. The value of Federal contracts awarded, about 6 million dollars, was only slightly above the amount reported in September, whereas permit valuations for private work, nearly 256 million dollars, were 37 percent higher.

New nonresidential building, only a very small portion of which was Federally financed, made up 41 percent of the building construction begun in October. New residential construction, financed entirely from private funds, accounted for 35 percent of the total, and additions, alterations, and repairs constituted the remaining 24 percent.

TABLE 1.—*Value of Building Construction Started in All Urban Areas, by Class of Construction and by Source of Funds, October 1945* [1]

Class of construction	Value (in millions)								
	Total			Federal			Other than Federal		
	October 1945	Percent of change from—		October 1945	Percent of change from—		October 1945	Percent of change from—	
		September 1945	October 1944		September 1945	October 1944		September 1945	October 1944
All construction	$262	+36.8	+162.9	$6	+42.2	−81.8	$256	+36.6	+302.9
New residential	92	+50.1	+332.4	0	0	−100.0	92	+50.1	+367.2
New nonresidential	108	+40.1	+124.0	4	+24.0	−87.1	104	+40.9	+538.8
Additions, alterations, and repairs	62	+16.5	+104.9	2	+88.2	−12.3	60	+14.7	+116.9

[1] Percentage changes computed before rounding.

Work was begun during October 1945 on 19,480 new family dwelling units, as compared with 14,619 in September and 7,469 in October 1944. This was the second consecutive month in 1945 in which none of the construction in this category was financed from Federal funds.

TABLE 2.—*Number and Value of New Dwelling Units Started in All Urban Areas, by Source of Funds and Type of Dwelling, October 1945*

Source of funds and type of dwelling	Number of dwelling units			Value (in thousands)		
	October 1945	Percent of change from—		October 1945	Percent of change from—	
		September 1945	October 1944		September 1945	October 1944
All dwellings	19,480	+33.3	+160.8	$90,996	+51.3	+327.1
Privately financed	19,480	+33.3	+183.0	90,996	+51.3	+361.6
1-family	16,568	+31.8	+213.3	79,099	+50.6	+418.9
2-family [1]	855	+1.2	+16.3	3,528	+10.4	+89.2
Multifamily [2]	2,057	+70.4	+138.9	8,369	+90.2	+221.4
Federally financed	0	0	−100.0	0	0	−100.0

[1] Includes 1- and 2-family dwellings with stores.
[2] Includes multifamily dwellings with stores.

Comparison of October 1945 and October 1944

The volume of urban building construction started during the month was more than two and a half times as much as the amount reported for October 1944. All classes of building construction shared in the 162-million-dollar gain over the year, but only because non-Federal work quadrupled. Federal construction dropped 82 percent from last October.

Comparison of First 10 Months of 1944 and 1945

Valuations of all work started during the first 10 months of 1945 totaled 1,456 million dollars, 56 percent more than the aggregate of 933 million dollars reported for the corresponding period of 1944. Non-Federal work was about nine-tenths greater than in 1944, with substantial gains occurring in all the various classes of building construction. Federal contract awards, on the other hand, were almost a fifth less than in the first 10 months of 1944. While Federal additions, alterations, and repairs rose from 13 million to 27 million dollars, the increase was offset by a 14-million-dollar drop in new residential construction. Federal new nonresidential building fell off 53 million dollars.

TABLE 3.—*Value of Building Construction Started in All Urban Areas, by Class of Construction and by Source of Funds, First 10 Months of 1945 and 1944*

Class of construction	Value (in millions)								
	Total			Federal			Other than Federal		
	First 10 months		Percent of change	First 10 months		Percent of change	First 10 months		Percent of change
	1945	1944		1945	1944		1945	1944	
All construction	$1,456	$933	+56.1	$236	$289	−18.3	$1,220	$644	+89.4
New residential	473	300	+57.7	29	43	−32.6	444	257	+72.8
New nonresidential	579	372	+55.6	180	233	−22.7	399	139	+187.1
Additions, alterations, and repairs	404	261	+54.8	27	13	+107.7	377	248	+52.0

TABLE 4.—*Number and Value of New Dwelling Units Started in All Urban Areas, by Source of Funds and Type of Dwelling, First 10 Months of 1945 and 1944*

Source of funds and type of dwelling	Number of dwelling units			Value (in thousands)		
	First 10 months of—		Percent of change	First 10 months of—		Percent of change
	1945	1944		1945	1944	
All dwellings	121,017	98,337	+23.1	$465,275	$296,565	+56.9
Privately financed	111,023	81,845	+35.7	438,118	255,715	+71.3
1-family	92,566	62,448	+48.2	376,937	195,281	+93.0
2-family [1]	6,936	8,728	−20.5	23,297	29,013	−19.7
Multifamily [2]	11,521	10,669	+8.0	37,884	31,421	+20.6
Federally financed	9,994	16,492	−39.4	27,157	40,850	−33.5

[1] Includes 1- and 2-family dwellings with stores.
[2] Includes multifamily dwellings with stores.

Construction from Public Funds, October 1945

The value of contracts awarded and force-account work started during October and September 1945 and October 1944 on all construction projects financed wholly or partially from Federal funds and reported to the Bureau of Labor Statistics is shown in table 5. This table includes all types of construction both inside and outside the corporate limits of cities in urban areas of the United States.

The contracts awarded and force-account work started on Federally financed building construction inside the corporate limits of cities in urban areas were valued at $6,599,000 in October 1945, $4,642,000 in September 1945, and $36,314,000 in October 1944.

TABLE 5.—*Total Value of Contracts Awarded and Force-Account Work Started on Federally Financed Construction, by Type of Project, October 1945* [1]

Type of project	Value (in thousands)		
	October 1945 [2]	September 1945 [3]	October 1944 [3]
All types	$43,954	$54,980	$80,365
Airports [4]	1,654	2,076	3,917
Building: [5]			
Residential	263	90	2,285
Nonresidential	15,965	28,293	50,001
Electrification [6]	1,822	10,950	4,079
Public roads [7]	13,079	6,904	7,647
Reclamation	2,000	1,558	3,962
River, harbor, and flood control	4,864	3,260	1,644
Streets and roads [8]	272	150	1,548
Water and sewerage	3,465	510	1,857
Miscellaneous	570	1,189	3,425

[1] Continental United States only.
[2] Preliminary; subject to revision.
[3] Revised.
[4] Exclusive of hangars and other buildings which are included under building construction.
[5] Data for building projects which are located in cities reporting to the Bureau are also included in tables 1 to 4 inclusive.
[6] Includes the value of loan agreements made for Rural Electrification Administration projects.
[7] Grade-crossing eliminations and roads.
[8] Other than those for which contracts were awarded by the Public Roads Administration.

Coverage and Method

Figures on building construction in this report cover the entire urban area of the United States which by Census definition includes all incorporated places with a 1940 population of 2,500 or more and, by special rule, a small number of unincorporated civil divisions. Valuation figures, the basis for statements concerning value, are derived from estimates of construction cost made by prospective builders when applying for permits to build, and the value of contracts awarded by the Federal Government. No land costs are included. Unless otherwise indicated, only building construction within the corporate limits of cities in urban areas is included in the tabulations.

Reports of building permits which were received in October 1945 for cities containing between 80 and 85 percent of the urban population of the country provide the basis for estimating the total number of buildings and dwelling units and the valuation of private urban building construction. Similar data for Federally financed urban building construction are compiled directly from notifications of construction contracts awarded, as furnished by Federal agencies.

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Trend of Employment, Earnings, and Hours

Summary of Employment Reports for October 1945

EMPLOYMENT declines in nonagricultural establishments amounted to less than 450,000 in October, as compared with 1,700,000 in September. An increase of 181,000 was reported by trade establishments—the largest September-October gain on record. This increase as well as the slight increase in construction was more than offset, however, by the decline of 234,000 in government and of 172,000 in manufacturing.

Industrial and Business Employment

Employment of production workers in factories (as distinct from total factory employment) declined by less than 1½ percent (135,000) between September and October. Except for aircraft and shipbuilding, where there was a large decline, the heavy industries actually

TABLE 1.—*Estimated Number of Production Workers and Indexes of Production-Worker Employment in Manufacturing Industries, by Major Industry Group* [1]

Industry group	Estimated number of production workers (in thousands)				Production-worker indexes (1939=100)	
	Oct. 1945 [2]	Sept. 1945	Aug. 1945	Oct. 1944	Oct. 1945 [2]	Sept. 1945
All manufacturing	9,958	10,093	11,670	13,440	121.6	123.2
Durable goods	4,931	5,059	6,540	7,981	136.6	140.1
Nondurable goods	5,027	5,034	5,130	5,459	109.7	109.9
Iron and steel and their products	1,195	1,194	1,444	1,672	120.5	120.5
Electrical machinery	444	454	617	728	171.2	175.3
Machinery, except electrical	887	880	1,039	1,178	167.9	166.6
Transportation equipment, except automobiles	642	773	1,439	2,175	404.2	486.9
Automobiles	461	423	544	685	114.7	105.2
Nonferrous metals and their products	307	296	367	404	134.0	129.2
Lumber and timber basic products	386	435	452	477	91.8	103.4
Furniture and finished lumber products	295	291	317	337	90.1	88.8
Stone, clay, and glass products	314	313	321	325	107.1	106.5
Textile-mill products and other fiber manufactures	1,033	1,032	1,031	1,087	90.3	90.2
Apparel and other finished textile products	793	788	781	876	100.5	99.8
Leather and leather products	305	300	308	312	87.8	86.3
Food	1,088	1,140	1,065	1,127	127.4	133.4
Tobacco manufactures	87	83	78	83	93.4	89.1
Paper and allied products	315	304	303	311	118.6	114.7
Printing, publishing, and allied industries	332	324	321	324	101.1	98.8
Chemicals and allied products	444	449	548	601	154.0	155.6
Products of petroleum and coal	135	130	135	132	127.8	122.6
Rubber products	173	168	179	194	143.2	138.9
Miscellaneous industries	322	316	381	412	131.8	129.2

[1] The estimates and indexes presented in this table have been adjusted to levels indicated by the final 1943 data made available by the Bureau of Employment Security of the Federal Security Agency.
[2] Preliminary.

showed a slight increase in employment. The automobile industry, which has practically completed reconversion, reported the largest increase—38,000 workers or a gain of 9 percent over the September low. Return to civilian production was also responsible for the lesser increases in the nonferrous and machinery groups.

With the exception of food and chemicals, all of the nondurable-goods groups of industries increased employment in October. The seasonal decline of about 50,000 in the food group was concentrated in the canning industry, while the explosives industry was responsible for the drop in the chemicals group. The increases among the remaining nondurable groups amounted to about 50,000.

Public Employment

By October 1, Federal war-agency employment within continental United States had declined 366,000 from the total on August 1. Between August 1 and September 1, the drop was 105,000 and between September 1 and October 1 it was 261,000. Of the October 1 decline, 128,000 was in the War Department and 70,000 in the Navy Department. Although the decline in other war agencies amounted to 63,000, or 37 percent, approximately 32,000 of these employees were transferred to peacetime agencies. The Labor Department received the largest addition, including the National War Labor Board, virtually all of the War Manpower Commission, and the Retraining and Reemployment Administration (formerly in the Office of War Mobilization and Reconversion). The State Department received certain functions of the Office of War Information and of the Office of Inter-American Affairs. Offsetting these additions to the staffs of the peacetime agencies were declines of 5,000 in the Agriculture Department and of 2,300 in the Treasury Department. These brought the net addition to peacetime agencies to 23,000 and added approximately $4,000,000 a month to their pay-roll level.

Employment outside continental United States rose by 12,000 in the war agencies and remained practically the same in the other agencies. Expanded War Department operations in the Pacific and South Pacific were mainly responsible for the war-agency rise.

The pay rolls of war agencies within continental United States declined $22,000,000 during the month of October. This resulted mainly from the employment cuts and transfers, but also resulted partially from the reduction of hours from 48 to 40 a week by The Panama Canal and from 44 to 40 by the departmental service of the Navy Department. Pay rolls of the peacetime agencies were practically the same in the month of October as they were in September 1945, the transfers of certain war agencies to peacetime agencies having been effected in September. A decrease in hours from 44 to 40 a week in the Agriculture Department, National Housing Agency, Securities and Exchange Commission, Foreign Economic Administration, and in the Office of Inter-American Affairs and National War Labor Board which were transferred to the State and Labor Departments, respectively, was at least partially responsible for the pay-roll stability.

The pay rolls of the peacetime agencies, shown in table 3, show an increase of $16,000,000 in July 1945, $10,000,000 of which is attributa-

ble to the passage of Public Law 134 of the 79th Congress, first session, which gave salary increases to the approximately 400,000 employees of the Postal Service as of July 1, 1945. The same act also prescribed salary scales and methods of payment for the clerks in third-class post offices which, in effect, made them employees of the Federal Government. Formerly, they had served on a contract basis. Employment of the Federal Government thus was increased in July by about 22,000.

Source of data.—Data for the Federal executive service are reported through the Civil Service Commission, whereas data for the legislative and judicial services and Government corporations are reported to the Bureau of Labor Statistics. Force-account employment is also included in construction employment (table 5), and navy-yard employment is also included in employment on shipbuilding and repair projects (table 4). The revised pay-roll series showing monthly figures from 1943 to date is available upon request.

TABLE 2.—*Employment and Pay Rolls for Regular Federal Services and for Government Corporations in Selected Months*

Year and month	Total	Executive[1]	Legislative	Judicial	Government corporations[2]
	Employment[3]				
October 1939	992,324	958,920	5,551	2,282	25,571
October 1940	1,127,921	1,093,078	5,938	2,518	26,387
October 1941	1,568,997	1,549,670	6,279	2,571	30,477
October 1942	2,671,692	2,629,189	6,314	2,664	33,525
October 1943	3,223,035	3,178,075	6,135	2,651	36,174
October 1944	3,369,288	3,324,693	6,240	2,633	35,722
June 1945	3,718,860	3,675,768	6,349	2,613	34,130
July 1945[4]	3,826,861	3,782,967	6,444	2,706	34,744
August 1945[4]	3,853,314	3,809,466	6,412	2,866	34,570
September 1945[4]	3,760,004	3,716,191	6,445	2,883	34,485
October 1945[4]	3,533,657	3,489,961	6,478	2,878	34,340
	Pay rolls (in thousands)[5]				
October 1943	$672,738	$664,958	$1,495	$768	$5,517
October 1944	684,763	677,023	1,529	789	5,422
June 1945[4]	715,016	707,062	1,657	816	5,481
July 1945[4]	732,348	724,236	1,771	842	5,499
August 1945[4]	698,393	690,189	1,779	857	5,568
September 1945[4]	595,806	587,658	1,794	865	5,489
October 1945[4]	574,664	566,552	1,800	857	5,455

[1] Includes employees in United States navy yards who are also included under shipbuilding (table 4) and employees on force-account construction who are also included under construction projects (table 5). Includes employees stationed outside continental United States. Beginning July 1945, data include approximately 22,000 clerks at third-class post offices who were previously working on a contract basis. Data exclude substitute rural mail carriers.

[2] Data are for employees of the Panama Railroad Co., the Federal Reserve banks, and banks of the Farm Credit Administration, who are paid out of operating revenues and not out of Federal appropriations. Data for other Government corporations are included under the executive service.

[3] Figures are as of the first of the calendar month.

[4] Preliminary.

[5] Pay rolls are from the revised series. Monthly figures are now available upon request for the period from January 1943 to date. Revised data for 1939–42 will be available shortly. Data are for all pay periods ending within the calendar month.

TABLE 3.—*Employment and Pay Rolls for the Executive Branch of the Federal Government, by War and Other Agencies, in Selected Months* [1]

Year and month	Total	War agencies [2]			Other agencies [2]		
		All areas	Continental United States	Outside continental United States [4]	All areas	Continental United States	Outside continental United States [4]
	Employment [5]						
October 1939	958,920	229,917	197,955	31,962	729,003	718,850	10,153
October 1940	1,093,078	328,860	273,835	55,025	764,218	752,110	12,108
October 1941	1,549,670	725,413	622,988	102,425	824,257	810,706	13,551
October 1942	2,629,189	1,774,994	1,566,801	208,193	854,195	839,696	14,499
October 1943	3,178,075	2,360,974	2,024,409	336,565	817,101	799,336	17,765
October 1944	3,324,693	2,480,712	2,053,014	427,698	843,981	828,157	15,824
June 1945	3,675,768	2,781,032	2,019,457	761,575	894,736	878,146	16,590
July 1945	3,782,967	2,848,405	2,020,240	828,165	934,562	915,970	18,592
August 1945 [6]	3,809,466	2,884,380	2,014,272	870,108	925,086	906,083	19,003
September 1945 [6]	3,716,191	2,781,756	1,909,339	872,417	934,435	910,021	24,414
October 1945 [6]	3,489,961	2,532,930	1,648,236	884,694	957,031	932,939	24,092
	Pay rolls (in thousands) [7]						
October 1943	$864,958	$501,927	$448,562	$53,365	$163,031	$159,406	$3,625
October 1944	677,023	506,923	459,628	47,295	170,100	166,677	3,423
June 1945 [6]	707,062	533,651	468,856	64,795	173,411	169,442	3,969
July 1945 [6]	724,236	534,751	466,635	68,116	189,485	185,405	4,080
August 1945 [6]	690,189	494,771	429,847	64,924	195,418	190,287	5,131
September 1945 [6]	587,658	387,906	321,603	66,303	199,752	194,424	5,328
October 1945 [6]	566,552	367,240	299,836	67,404	199,312	194,364	4,948

[1] Includes employees in United States navy yards who are also included under shipbuilding (table 4) and employees on force-account construction who are also included under construction projects (table 5).
[2] Covers War and Navy Departments, Maritime Commission, National Advisory Committee for Aeronautics, The Panama Canal, and the emergency war agencies.
[3] Beginning July 1945, data include approximately 22,000 clerks at third-class post offices who were previously working on a contract basis. Data exclude substitute rural mail carriers.
[4] Includes Alaska and the Panama Canal Zone.
[5] Figures are as of the first of the calendar month.
[6] Preliminary.
[7] Pay rolls are from the revised series. Monthly figures are available upon request for the period from January 1943 to date. Revised data for 1939–42 will be available shortly. Data are for all pay periods ending within the calendar month.

Employment in Shipyards

During October, employment in shipyards continued the rapid decline which started immediately after the end of the war with Japan. The net loss of 108,700 workers between September 15 and October 15, however, was less than half the net loss of 259,300 workers between August 15 and September 15.

Of the 652,700 workers employed in October, 238,000 were in United States navy yards and 414,700 in private shipyards. Of the total, 381,700 were employed in the new construction of ships and 271,000 in service and repair work. This represents a decline of 232,400 new construction workers and 135,300 service and repair workers since August 15, showing that by far the greater loss of workers since VJ-day has been on new construction.

Data on employment and pay rolls are received monthly by the Bureau of Labor Statistics directly from private shipyards. Data for United States navy yards are received monthly from the Navy Department. Employees in the navy yards are also included in data for the Federal executive service (tables 2 and 3).

TABLE 4.—*Total Employment and Pay Rolls in United States Navy Yards and Private Shipyards, by Shipbuilding Region, October 1945*

Shipbuilding region	Employment (in thousands)			Pay rolls (in thousands)		
	October 1945 [1]	September 1945	October 1944	October 1945 [1]	September 1945	October 1944
All regions	652.7	761.4	1,475.9	$170,823	$198,272	$432,619
United States navy yards [2]	238.0	261.2	320.5	69,586	76,316	92,617
Private shipyards	414.7	500.2	1,155.4	101,237	121,956	340,002
North Atlantic	277.8	316.2	527.5	79,107	89,769	156,235
South Atlantic	70.6	79.1	130.0	17,356	19,441	35,231
Gulf	67.5	83.7	195.8	15,871	19,684	57,967
Pacific	219.9	262.4	509.9	54,219	64,315	150,742
Great Lakes	10.0	11.8	54.8	2,749	3,238	17,324
Inland	6.9	8.2	57.9	1,521	1,825	15,120

[1] Preliminary.
[2] Includes all navy yards constructing or repairing ships, including the Curtis Bay (Maryland) Coast Guard yard. These data are also included in the Federal executive service (tables 2 and 3).

Construction Employment

With the removal of Government restrictions on private construction, employment on non-Federal projects increased 58,900 during October—a most unusual gain for this time of year. Federal construction employment, on the other hand, declined 11,400. Construction employment as a whole reached a total of 1,153,900 in October 1945—56,900 above September and 359,900 more than in October 1944.

Employment on non-Federal construction projects approximated 875,200 this October, almost double the 444,500 reported in October a year ago. All types of non-Federal projects shared in the gain, with the greatest increase, 245,500, occurring in new nonresidential building, followed by a rise of 118,700 in new residential construction. Federal construction employment, however, dropped from 211,200 in October 1944 to 123,100 this October. The only type of Federal construction which did not show a decline in employment over the year was electrification projects.

During the month there were contraseasonal gains of 50,000 in non-Federally financed nonresidential building and of 22,700 in new residential construction. Seasonal declines of 15,300 and 1,300 occurred on farm dwellings and service buildings and on streets and highways, respectively. Federal nonresidential construction employment dropped 11,300 during October, reflecting the virtual termination of the war construction program.

TABLE 5.—*Estimated Employment and Pay Rolls on Construction within Continental United States, October 1945*

Type of project	Employment (in thousands)			Pay rolls (in thousands)		
	October 1945 [1]	September 1945	October 1944	October 1945 [1]	September 1945	October 1944
New construction, total [2]	1,153.9	1,097.0	794.0	[3]	[3]	[3]
At the construction site	998.3	950.8	655.7	[3]	[3]	[3]
Federal projects [4]	123.1	134.5	211.2	$24,362	$27,982	$45,459
Airports	6.7	6.8	11.7	1,332	1,424	2,446
Buildings	68.7	82.8	135.4	13,878	17,974	29,704
Residential	7.1	9.9	15.5	1,373	2,176	3,210
Nonresidential [5]	61.6	72.9	119.9	12,505	15,798	26,494
Electrification	.8	.8	.6	143	144	91
Reclamation	6.1	6.1	11.0	1,342	1,350	2,434
River, harbor, and flood control	18.0	16.5	19.9	3,784	3,317	4,054
Streets and highways	12.2	11.6	14.3	2,107	2,091	3,002
Water and sewer systems	2.7	2.4	5.3	447	409	927
Miscellaneous	7.9	7.5	13.0	1,329	1,273	2,801
Non-Federal projects	875.2	816.3	444.5	[3]	[3]	[3]
Buildings	561.1	488.4	196.9	134,664	112,820	46,862
Residential	209.4	186.7	90.7	[3]	[3]	[3]
Nonresidential	351.7	301.7	106.2	[3]	[3]	[3]
Farm dwellings and service buildings	120.2	135.5	107.0	[3]	[3]	[3]
Public utilities	121.9	121.9	88.2	[3]	[3]	[3]
Streets and highways	39.8	41.1	36.0	[3]	[3]	[3]
State	18.0	18.9	17.2	[3]	[3]	[3]
County and municipal	21.8	22.2	18.8	[3]	[3]	[3]
Miscellaneous	32.2	29.4	16.4	[3]	[3]	[3]
Other [6]	155.6	146.2	138.3	[3]	[3]	[3]
Maintenance of State roads [7]	90.0	90.4	92.0	[3]	[3]	[3]

[1] Preliminary.

[2] Data are for all construction workers (contract and force-account) engaged on new construction, additions and alterations, and on repair work of the type usually covered by building permits. (Force-account employees are workers hired directly by the owner and utilized as a separate work force to perform construction work of the type usually chargeable to capital account.) The construction figure included in the Bureau's nonagricultural employment series covers only employees of construction contractors and on Federal force-account and excludes force-account workers of State and local governments, public utilities, and private firms.

[3] Data not available.

[4] Includes the following force-account employees, hired directly by the Federal Government, and their pay rolls: October 1944, 25,975, $5,114,037; September 1945, 17,523, $3,321,042; October 1945, 17,593, $3,332,404. These employees are also included under the Federal executive service (tables 2 and 3); all other workers were employed by contractors and subcontractors.

[5] Employees and pay rolls for Defense Plant Corporation projects are included, but those for projects financed from RFC loans are excluded. The latter are considered non-Federal projects.

[6] Includes central office force of construction contractors, shop employees of special trades contractors, such as bench sheet-metal workers, etc., and site employees engaged on projects which, for security reasons, cannot be shown above.

[7] Data for other types of maintenance not available.

Source of data.—For construction projects financed wholly or partially from Federal funds, the Bureau of Labor Statistics receives monthly reports on employment and pay rolls at the construction site directly from the contractors or from the Federal agency sponsoring the project. Force-account employees hired directly by the Federal Government are also included in tables 2 and 3 under Federal executive service.

Estimates of employment on non-Federal construction projects (except State roads) are obtained by converting the value of work started (compiled from reports on building permits issued, priorities granted, and from certain special reports) into monthly expenditures and employment by means of factors which have been developed from special studies and adjusted to current conditions. For State roads projects, data represent estimates of the Public Roads Administration.

Detailed Reports on Industrial and Business Employment, September 1945

Nonagricultural Employment

ESTIMATES of employment in nonagricultural establishments are shown in table 1. The estimates are based on reports of employers to the Bureau of Labor Statistics, on unemployment-compensation data made available by the Bureau of Employment Security of the Federal Security Agency, and on information supplied by other Government agencies, such as the Interstate Commerce Commission, Civil Service Commission, Bureau of the Census, and the Bureau of Old-Age and Survivors Insurance. The estimates include all wage and salaried workers in nonagricultural establishments but exclude military personnel, proprietors, self-employed persons, and domestic servants.

Estimates of employees in nonagricultural establishments, by States, are published each month in a detailed report on employment and pay rolls.

TABLE 1.—*Estimated Number of Employees in Nonagricultural Establishments, by Industry Division*

Industry division	Estimated number of employees (in thousands)			
	Sept. 1945	Aug. 1945	July 1945	Sept. 1944
Total estimated employment [1]	35,344	37,015	37,273	38,571
Manufacturing [2]	12,132	13,862	14,130	15,843
Mining	784	784	784	826
Contract construction and Federal force-account construction	948	927	911	671
Transportation and public utilities	3,831	3,860	3,858	3,791
Trade	7,136	6,979	6,975	6,994
Finance, service, and miscellaneous	4,578	4,666	4,672	4,488
Federal, State, and local government, excluding Federal force-account construction	5,935	5,937	5,943	5,958

[1] Estimates include all full- and part-time wage and salary workers in nonagricultural establishments who are employed during the pay period ending nearest the 15th of the month. Proprietors, self employed persons, domestic servants, and personnel of the armed forces are excluded.

[2] Estimates for manufacturing have been adjusted to levels indicated by final 1942 data made available by the Bureau of Employment Security of the Federal Security Agency. Since the estimated number of production workers in manufacturing industries have been further adjusted to final 1943 data, subsequent to December 1942, the two sets of estimates are not comparable.

Industrial and Business Employment

Monthly reports on employment and pay rolls are available for 154 manufacturing industries and for 27 nonmanufacturing industries, including water transportation and class I steam railroads. The reports for the first 2 of these groups—manufacturing and nonmanufacturing—are based on sample surveys by the Bureau of Labor Statistics. The figures on water transportation are based on estimates prepared by the Maritime Commission, and those on class I steam railroads are compiled by the Interstate Commerce Commission. The employment, pay roll, hours, and earnings figures for manufacturing, mining, laundries, and cleaning and dyeing, cover production workers only;

but the figures for public utilities, brokerage, insurance, and hotels relate to all employees except corporation officers and executives, while for trade they relate to all employees except corporation officers, executives, and other employees whose duties are mainly supervisory. For crude-petroleum production they cover production workers and clerical field force. The coverage of the reporting samples for the various nonmanufacturing industries ranges from about 25 percent for wholesale and retail trade, cleaning and dyeing, and insurance, to about 80 percent for public utilities and 90 percent for mining.

The general manufacturing indexes are computed from reports supplied by representative establishments in the 154 manufacturing industries surveyed. These reports cover more than 65 percent of the total production workers in all manufacturing industries of the country and about 80 percent of the production workers in the 154 industries covered.

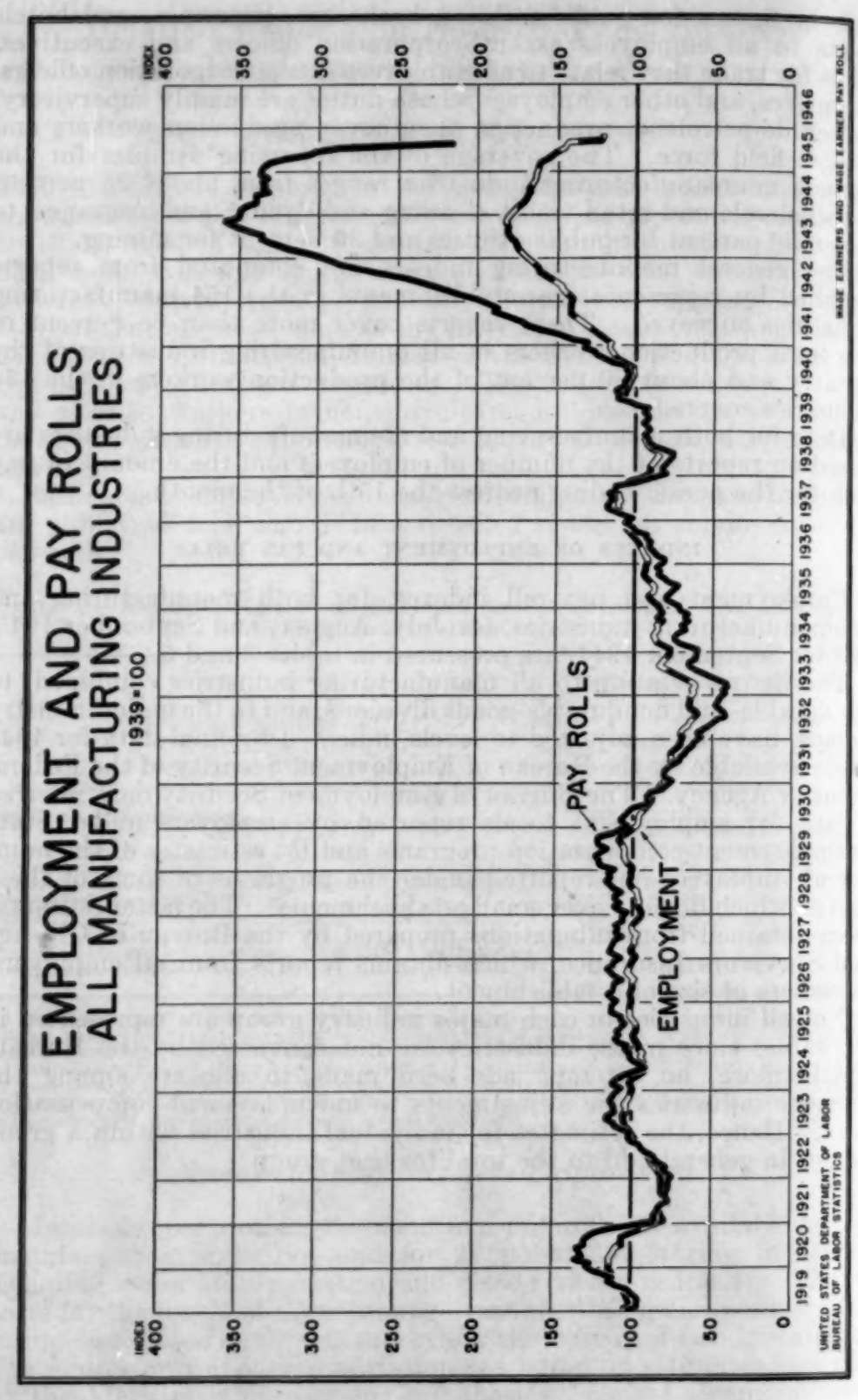
Data for both manufacturing and nonmanufacturing industries are based on reports of the number of employees and the amount of pay rolls for the period ending nearest the 15th of the month.

INDEXES OF EMPLOYMENT AND PAY ROLLS

Employment and pay-roll indexes, for both manufacturing and nonmanufacturing industries, for July, August, and September 1945, and for September 1944, are presented in tables 3 and 5.

The figures relating to all manufacturing industries combined, to the durable- and nondurable-goods divisions, and to the major industry groups, have been adjusted to levels indicated by final data for 1943 made available by the Bureau of Employment Security of the Federal Security Agency. The Bureau of Employment Security data referred to are (*a*) employment totals reported by employers under State unemployment-compensation programs and (*b*) estimates of the number of employees not reported under the programs of some of these States, which do not cover small establishments. The latter estimates were obtained from tabulations prepared by the Bureau of Old-Age and Survivors Insurance, which obtains reports from all employers, regardless of size of establishment.

Not all industries in each major industry group are represented in the tables since minor industries are not canvassed by the Bureau. Furthermore, no attempt has been made to allocate among the separate industries the adjustments to unemployment-compensation data. Hence, the estimates for individual industries within a group do not in general add to the total for that group.


EMPLOYMENT AND PAY ROLLS
ALL MANUFACTURING INDUSTRIES
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INDEX
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PAY ROLLS
EMPLOYMENT
1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946
UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WAGE EARNERS AND WAGE EARNER PAY ROLL

TABLE 2.—*Estimated Number of Production Workers in Manufacturing Industries*

Industry	Estimated number of production workers (in thousands)			
	Sept. 1945	Aug. 1945	July 1945	Sept. 1944
All manufacturing [1]	10,093	11,670	11,927	13,602
Durable goods [1]	5,059	6,540	6,781	8,100
Nondurable goods [1]	5,034	5,130	5,146	5,502
Durable goods				
Iron and steel and their products [1]	1,194	1,444	1,503	1,686
Blast furnaces, steel works, and rolling mills	422.4	456.7	461.6	476.7
Gray-iron and semisteel castings	66.1	68.7	70.0	72.5
Malleable-iron castings	22.4	22.0	22.3	25.0
Steel castings	53.4	58.0	60.6	72.3
Cast-iron pipe and fittings	13.2	14.7	15.1	15.3
Tin cans and other tinware	37.6	40.5	42.4	41.9
Wire drawn from purchased rods	27.5	29.5	29.3	32.6
Wirework	26.0	29.8	30.1	35.5
Cutlery and edge tools	21.1	22.1	21.7	23.0
Tools (except edge tools, machine tools, files, and saws)	22.6	24.5	25.3	27.0
Hardware	33.9	41.3	42.2	45.6
Plumbers' supplies	17.7	20.9	21.8	22.7
Stoves, oil burners, and heating equipment, not elsewhere classified	44.4	55.8	57.0	63.3
Steam and hot-water heating apparatus and steam fittings	40.1	44.3	47.2	55.1
Stamped and enameled ware and galvanizing	59.8	75.9	80.4	88.3
Fabricated structural and ornamental metalwork	41.0	50.1	55.1	73.9
Metal doors, sash, frames, molding, and trim	7.0	7.7	8.7	12.4
Bolts, nuts, washers, and rivets	19.5	21.7	22.3	25.7
Forgings, iron and steel	26.2	30.0	30.5	35.5
Wrought pipe, welded and heavy riveted	12.3	21.9	21.6	25.3
Screw-machine products and wood screws	25.8	35.8	37.5	43.5
Steel barrels, kegs, and drums	6.0	8.3	8.2	7.3
Firearms	10.2	16.5	19.2	43.6
Electrical machinery [1]	454	617	636	739
Electrical equipment	293.0	375.8	385.3	444.4
Radios and phonographs	60.3	98.8	105.4	124.9
Communication equipment	64.5	93.0	95.2	110.2
Machinery, except electrical [1]	880	1,039	1,069	1,189
Machinery and machine-shop products	332.9	398.9	410.1	453.9
Engines and turbines	45.1	57.6	59.7	69.3
Tractors	48.1	51.4	53.3	57.5
Agricultural machinery, excluding tractors	35.3	39.5	40.8	44.2
Machine tools	60.3	66.6	68.8	75.6
Machine-tool accessories	47.2	57.8	58.6	65.5
Textile machinery	24.9	24.5	24.9	27.0
Pumps and pumping equipment	52.5	62.5	64.3	75.2
Typewriters	11.5	12.8	12.8	11.7
Cash registers, adding and calculating machines	25.2	26.9	26.8	31.9
Washing machines, wringers and driers, domestic	6.5	10.9	11.1	12.9
Sewing machines, domestic and industrial	7.4	9.6	10.0	9.8
Refrigerators and refrigeration equipment	33.4	43.8	45.8	52.0
Transportation equipment, except automobiles [1]	773	1,439	1,526	2,216
Locomotives	29.0	30.5	30.9	35.3
Cars, electric- and steam-railroad	40.3	55.4	57.9	57.2
Aircraft and parts, excluding aircraft engines	164.7	444.7	472.8	660.0
Aircraft engines	31.5	149.9	166.2	233.5
Shipbuilding and boatbuilding	450.3	656.3	691.0	1,074.2
Motorcycles, bicycles, and parts	7.4	8.4	9.2	8.9
Automobiles [1]	423	544	581	703
Nonferrous metals and their products [1]	296	367	371	412
Smelting and refining, primary, of nonferrous metals	36.8	38.0	38.2	44.1
Alloying and rolling and drawing of nonferrous metals, except aluminum	55.4	62.8	63.1	69.2
Clocks and watches	19.6	22.8	22.6	26.0
Jewelry (precious metals) and jewelers' findings	13.5	13.0	12.9	13.5
Silverware and plated ware	9.3	10.5	10.5	10.9
Lighting equipment	17.1	21.8	23.1	26.9
Aluminum manufactures	35.8	59.2	61.2	66.4
Sheet-metal work, not elsewhere classified	21.2	30.8	29.9	32.9
Lumber and timber basic products [1]	435	452	453	487
Sawmills and logging camps	207.6	215.1	215.1	233.5
Planing and plywood mills	63.1	65.9	67.1	69.7

See footnote at end of table.

TABLE 2.—*Estimated Number of Production Workers in Manufacturing Industries*—Con.

Industry	Estimated number of production workers (in thousands)			
	Sept. 1945	Aug. 1945	July 1945	Sept. 1944
Durable goods—Continued				
Furniture and finished lumber products [1]	291	317	321	339
Mattresses and bedsprings	14.7	17.1	16.9	17.6
Furniture	128.4	141.1	143.9	153.4
Wooden boxes, other than cigar	23.4	24.9	25.7	27.3
Caskets and other morticians' goods	11.3	11.6	11.8	12.3
Wood preserving	10.3	10.0	10.0	9.9
Wood, turned and shaped	19.5	21.1	20.9	21.2
Stone, clay, and glass products [1]	313	321	321	329
Glass and glassware	84.5	87.0	86.1	88.3
Glass products made from purchased glass	9.8	10.0	10.7	10.2
Cement	19.4	18.2	17.5	17.3
Brick, tile, and terra cotta	42.7	41.6	41.7	41.9
Pottery and related products	37.4	37.7	37.5	40.4
Gypsum	4.1	4.1	4.0	4.0
Wallboard, plaster (except gypsum), and mineral wool	9.0	9.1	9.3	9.6
Lime	7.4	7.5	7.5	8.0
Marble, granite, slate, and other products	11.9	13.1	13.1	13.2
Abrasives	16.5	19.8	20.5	20.9
Asbestos products	17.5	18.8	19.1	19.9
Nondurable goods				
Textile-mill products and other fiber manufactures [1]	1,032	1,031	1,034	1,091
Cotton manufactures, except smallwares	407.0	407.3	408.9	427.5
Cotton smallwares	12.4	13.0	13.0	13.1
Silk and rayon goods	84.9	85.0	84.5	88.3
Woolen and worsted manufactures, except dyeing and finishing	136.3	134.3	135.1	145.8
Hosiery	96.2	95.5	94.8	102.9
Knitted cloth	9.6	9.7	9.9	10.1
Knitted outerwear and knitted gloves	26.3	25.9	26.1	28.4
Knitted underwear	32.5	32.7	33.2	34.3
Dyeing and finishing textiles, including woolen and worsted	55.9	55.8	56.5	59.4
Carpets and rugs, wool	17.8	18.8	19.0	20.1
Hats, fur-felt	9.3	9.0	8.6	9.2
Jute goods, except felts	3.4	3.2	3.2	3.3
Cordage and twine	13.8	14.3	14.2	15.1
Apparel and other finished textile products [1]	788	781	761	871
Men's clothing, not elsewhere classified	180.5	185.9	188.0	208.1
Shirts, collars, and nightwear	48.5	47.5	48.0	51.7
Underwear and neckwear, men's	11.3	11.3	11.6	12.1
Work shirts	13.1	14.0	14.2	14.7
Womens' clothing, not elsewhere classified	202.1	190.4	175.4	216.4
Corsets and allied garments	14.1	13.4	13.3	14.5
Millinery	18.1	17.5	16.3	19.3
Handkerchiefs	2.6	2.5	2.5	2.8
Curtains, draperies, and bedspreads	9.8	10.2	10.2	13.1
Housefurnishings, other than curtains, etc	8.0	10.6	10.8	11.0
Textile bags	14.4	14.4	14.6	13.7
Leather and leather products [1]	300	308	307	313
Leather	38.8	38.2	38.4	39.4
Boot and shoe cut stock and findings	16.3	16.3	16.1	15.5
Boots and shoes	164.6	169.1	169.3	172.0
Leather gloves and mittens	11.0	11.3	11.3	12.5
Trunks and suitcases	10.9	13.1	12.8	12.6
Food [1]	1,140	1,065	1,054	1,184
Slaughtering and meat packing	126.5	124.3	127.4	150.6
Butter	23.7	24.6	25.4	22.3
Condensed and evaporated milk	14.9	15.8	16.2	14.2
Ice cream	16.6	17.3	17.7	15.4
Flour	30.8	30.6	30.1	28.1
Feeds, prepared	23.0	22.2	22.1	19.8
Cereal preparations	9.7	9.5	9.3	8.5
Baking	250.9	248.9	250.1	255.6
Sugar refining, cane	13.1	13.0	13.2	14.9
Sugar, beet	7.6	5.0	4.4	6.8
Confectionery	50.8	50.2	49.0	56.5
Beverages, nonalcoholic	25.7	26.2	26.5	29.8
Malt liquors	55.2	53.8	52.9	52.9
Canning and preserving	237.9	179.5	166.5	244.4

See footnote at end of table.

TABLE 2.—*Estimated Number of Production Workers in Manufacturing Industries*—Con.

Industry	Estimated number of production workers (in thousands)			
	Sept. 1945	Aug. 1945	July 1945	Sept. 1944
Nondurable goods—Continued				
Tobacco manufactures [1]	83	78	78	82
Cigarettes	34.9	33.7	33.9	34.6
Cigars	34.4	31.4	30.5	34.4
Tobacco (chewing and smoking) and snuff	8.7	8.4	8.4	8.0
Paper and allied products [1]	304	303	302	310
Paper and pulp	142.0	143.1	142.1	145.3
Paper goods, other	42.3	42.1	41.9	42.5
Envelopes	9.5	9.2	9.2	9.5
Paper bags	12.5	11.7	12.3	13.1
Paper boxes	76.8	75.8	75.3	77.7
Printing, publishing, and allied industries [1]	324	321	317	319
Newspapers and periodicals	112.2	110.0	107.4	109.3
Printing, book and job	133.1	133.2	131.1	130.3
Lithographing	24.1	24.1	24.2	24.0
Bookbinding	26.3	27.0	27.1	27.1
Chemicals and allied products [1]	449	548	587	593
Paints, varnishes, and colors	29.8	29.0	28.9	29.5
Drugs, medicines, and insecticides	46.9	49.6	50.0	49.0
Perfumes and cosmetics	12.4	12.6	12.4	12.0
Soap	13.2	13.0	13.0	13.5
Rayon and allied products	53.4	53.1	53.7	52.7
Chemicals, not elsewhere classified	111.9	112.2	113.0	117.0
Explosives and safety fuses	36.7	80.2	87.6	83.5
Compressed and liquefied gases	5.5	5.9	5.9	5.9
Ammunition, small-arms	12.6	37.9	57.4	49.8
Fireworks	3.5	14.3	17.5	27.6
Cottonseed oil	14.5	11.5	11.6	16.3
Fertilizers	20.8	19.9	19.6	19.1
Products of petroleum and coal [1]	130	135	135	133
Petroleum refining	87.0	92.9	93.0	90.7
Coke and byproducts	22.8	22.0	21.9	22.9
Paving materials	1.7	1.7	1.8	1.6
Roofing materials	9.8	9.3	9.4	9.5
Rubber products [1]	168	179	183	194
Rubber tires and inner tubes	84.8	86.3	87.7	92.3
Rubber boots and shoes	14.8	16.7	16.8	18.5
Rubber goods, other	57.0	64.4	66.2	70.4
Miscellaneous industries [1]	316	381	388	412
Instruments (professional and scientific) and fire-control equipment	26.0	49.7	52.3	61.5
Photographic apparatus	20.9	26.7	26.8	27.9
Optical instruments and ophthalmic goods	19.4	21.2	20.8	23.4
Pianos, organs, and parts	5.1	7.4	7.7	6.8
Games, toys, and dolls	12.7	13.9	14.4	16.9
Buttons	8.8	8.9	9.0	9.0
Fire extinguishers	3.2	4.1	4.2	5.5

[1] Estimates for the major industry groups have been adjusted to levels indicated by the final 1943 data made available by the Bureau of Employment Security of the Federal Security Agency and should not be compared with the manufacturing employment estimates of production workers plus salaried employees appearing in table 6. Data for 15 major groups are not comparable with data published in mimeographed releases dated prior to September 1945 or the October 1945 issue of the Monthly Labor Review. Comparable data from January 1939 are available upon request. Five major groups—furniture and finished lumber products; stone, clay, and glass products; tobacco manufactures; chemicals and allied products; and products of petroleum and coal—needed no further adjustment and are therefore comparable with the data previously published. Estimates for individual industries have been adjusted to levels indicated by the 1939 Census of Manufactures, but not to Federal Security Agency data. For this reason, together with the fact that this Bureau has not prepared estimates for certain industries, the sum of the individual industry estimates will not agree with totals shown for the major industry groups

TABLE 3.—*Indexes of Production-Worker Employment and Pay Rolls in Manufacturing Industries*

[1939 average=100]

Industry	Employment indexes				Pay-roll indexes			
	Sept. 1945	Aug. 1945	July 1945	Sept. 1944	Sept. 1945	Aug. 1945	July 1945	Sept. 1944
All manufacturing [1]	123.2	142.5	145.6	166.0	215.7	257.1	286.7	333.8
Durable goods [1]	140.1	181.1	187.8	224.3	238.7	324.7	373.1	460.6
Nondurable goods [1]	109.9	112.0	112.3	120.1	193.2	191.0	202.2	209.8
Durable goods								
Iron and steel and their products [1]	120.5	145.6	151.6	170.0	200.9	247.0	280.1	319.3
Blast furnaces, steel works, and rolling mills	108.8	117.6	118.8	122.7	175.3	199.2	217.3	226.7
Gray-iron and semisteel castings	113.1	117.5	119.8	124.2	216.1	216.9	239.9	252.0
Malleable-iron castings	124.1	121.9	123.4	138.8	230.6	208.2	243.4	292.5
Steel castings	177.6	192.7	201.3	240.3	280.9	311.4	349.3	452.0
Cast-iron pipe and fittings	80.0	89.1	91.4	92.6	151.2	160.2	183.6	181.6
Tin cans and other tinware	118.4	127.4	133.3	131.8	200.7	209.0	233.9	224.8
Wire drawn from purchased rods	125.1	134.4	133.2	148.4	179.4	208.4	217.4	247.5
Wirework	85.7	98.0	99.1	116.9	153.9	176.1	196.0	237.5
Cutlery and edge tools	137.0	143.5	140.8	149.2	260.7	260.7	291.5	310.0
Tools (except edge tools, machine tools, files, and saws)	147.8	160.3	165.2	176.3	255.0	282.0	311.9	328.6
Hardware	95.0	116.0	118.5	128.0	173.9	209.2	238.4	261.1
Plumbers' supplies	72.0	84.7	88.4	92.1	122.2	136.2	159.7	167.4
Stoves, oil burners, and heating equipment, not elsewhere classified	96.3	121.1	123.6	137.3	167.2	202.4	231.9	261.0
Steam and hot-water heating apparatus and steam fittings	132.2	146.2	155.8	181.9	231.4	253.6	289.4	341.3
Stamped and enameled ware and galvanizing	107.7	136.7	144.8	159.0	190.1	242.9	282.3	326.6
Fabricated structural and ornamental metalwork	115.5	141.1	155.0	208.0	179.0	239.7	278.8	406.6
Metal doors, sash, frames, molding, and trim	90.1	99.8	113.0	159.7	152.0	169.6	217.0	306.2
Bolts, nuts, washers, and rivets	136.1	151.5	156.2	179.4	217.1	287.9	293.8	347.3
Forgings, iron and steel	170.5	195.4	198.5	230.7	268.4	309.8	374.9	465.3
Wrought pipe, welded and heavy riveted	147.1	261.4	258.0	302.5	233.2	551.0	565.5	584.3
Screw-machine products and wood screws	152.6	211.7	221.8	257.0	264.9	375.4	427.3	504.1
Steel barrels, kegs, and drums	99.3	136.9	135.2	119.7	157.8	237.3	288.0	232.3
Firearms	203.5	330.9	383.2	871.5	355.7	653.5	843.4	2002.6
Electrical machinery [1]	175.3	238.2	245.6	285.1	273.4	385.3	445.0	520.7
Electrical equipment	162.1	207.9	213.2	245.9	246.0	330.2	387.0	457.7
Radios and phonographs	138.6	227.1	242.2	287.0	239.1	389.3	463.4	547.0
Communication equipment	200.9	289.7	296.4	343.2	314.4	478.8	508.2	561.8
Machinery, except electrical [1]	166.6	196.7	202.2	225.0	274.6	327.7	371.6	421.4
Machinery and machine-shop products	164.6	197.1	202.7	224.3	266.4	323.6	365.9	410.3
Engines and turbines	242.0	308.5	319.8	371.3	365.6	510.8	640.6	772.6
Tractors	153.9	164.4	170.6	183.8	236.6	249.9	271.9	291.0
Agricultural machinery, excluding tractors	126.9	142.1	146.9	159.0	236.3	259.4	297.5	332.7
Machine tools	164.8	181.8	187.7	206.5	266.1	303.9	328.8	366.8
Machine-tool accessories	187.6	229.6	233.1	260.4	277.0	336.4	388.3	449.6
Textile machinery	113.6	111.7	113.8	123.3	209.8	191.3	210.9	226.3
Pumps and pumping equipment	216.6	257.9	265.1	310.2	389.9	512.3	542.8	665.6
Typewriters	71.2	78.8	78.7	72.3	128.9	132.1	159.4	144.4
Cash registers, adding and calculating machines	128.1	136.4	136.0	162.2	210.4	231.1	266.4	317.0
Washing machines, wringers and driers, domestic	87.4	146.6	148.7	172.3	143.2	242.9	259.6	306.1
Sewing machines, domestic and industrial	94.6	122.3	127.0	125.5	192.8	235.4	262.6	261.8
Refrigerators and refrigeration equipment	95.0	124.4	130.3	147.9	155.9	168.8	228.7	262.9
Transportation equipment, except automobiles [1]	486.9	906.6	961.1	1396.1	818.4	1713.8	1999.9	2931.8
Locomotives	449.0	471.6	477.7	546.0	753.9	856.3	1017.1	1222.9
Cars, electric- and steam-railroad	164.4	226.0	236.1	233.4	277.3	396.1	450.9	450.2
Aircraft and parts, excluding aircraft engines	415.1	1120.9	1191.7	1663.4	643.4	1917.2	2310.4	3175.4
Aircraft engines	354.0	1685.6	1869.5	2626.4	448.3	2359.5	3042.5	4628.3
Shipbuilding and boatbuilding	650.2	947.9	997.9	1551.4	1125.3	1952.4	2193.4	3399.3
Motorcycles, bicycles, and parts	106.4	120.2	131.8	127.9	160.6	216.6	251.3	244.7
Automobiles [1]	105.2	135.2	144.4	174.7	150.5	178.8	244.7	311.1
Nonferrous metals and their products [1]	129.2	160.1	162.0	179.5	220.2	282.7	302.7	336.9
Smelting and refining, primary, of nonferrous metals	133.0	137.5	138.3	159.5	239.4	258.6	267.5	297.8
Alloying and rolling and drawing of nonferrous metals, except aluminum	142.7	161.6	162.6	178.4	238.5	292.3	293.8	330.1
Clocks and watches	96.6	112.2	111.5	128.4	168.5	212.5	234.2	268.5
Jewelry (precious metals) and jewelers' findings	93.7	90.2	89.6	93.4	165.9	147.0	149.5	155.2
Silverware and plated ware	76.5	86.8	86.7	89.6	138.9	151.4	152.9	161.8
Lighting equipment	83.5	106.2	112.7	131.3	130.4	139.0	204.0	222.7
Aluminum manufactures	152.1	251.3	260.0	282.1	220.3	416.8	449.9	506.3
Sheet-metal work, not elsewhere classified	113.0	164.2	159.4	175.5	199.7	284.4	306.7	335.3

See footnotes at end of table.

TABLE 3.—*Indexes of Production-Worker Employment and Pay Rolls in Manufacturing Industries*—Continued

[1939 average = 100]

Industry	Employment indexes				Pay-roll indexes			
	Sept. 1945	Aug. 1945	July 1945	Sept. 1944	Sept. 1945	Aug. 1945	July 1945	Sept. 1944
Durable goods—Continued								
Lumber and timber basic products [1]	103.4	107.5	107.9	115.8	184.8	189.0	192.9	215.9
Sawmills and logging camps	72.1	74.7	74.7	81.1	130.9	133.8	133.9	154.3
Planing and plywood mills	86.8	90.7	92.4	95.9	145.2	147.3	159.0	164.8
Furniture and finished lumber products [1]	88.8	96.6	98.0	103.4	157.5	165.0	181.3	189.3
Mattresses and bedsprings	80.2	93.3	92.2	95.9	137.6	149.2	163.9	167.5
Furniture	80.6	88.6	90.4	96.3	140.8	150.4	165.7	175.0
Wooden boxes, other than cigar	92.3	98.1	101.3	107.7	178.3	186.7	205.5	215.2
Caskets and other morticians' goods	90.6	93.5	94.5	99.2	149.6	136.2	165.2	172.4
Wood preserving	91.2	88.8	88.5	87.7	206.1	187.5	194.2	188.0
Wood, turned and shaped	88.5	95.8	94.9	96.3	159.0	166.4	174.9	174.7
Stone, clay, and glass products [1]	106.5	109.3	109.3	112.1	176.8	181.7	187.7	188.2
Glass and glassware	121.0	124.5	123.3	126.5	188.9	192.7	194.2	200.7
Glass products made from purchased glass	98.1	99.8	106.6	102.0	172.2	166.6	180.9	173.1
Cement	81.3	76.5	73.4	72.6	131.0	128.0	127.5	115.8
Brick, tile, and terra cotta	75.2	73.2	73.4	73.9	125.6	118.2	126.7	119.3
Pottery and related products	113.0	113.9	113.2	121.9	172.7	173.3	176.3	188.9
Gypsum	82.9	82.1	80.9	80.6	144.8	139.6	141.2	137.3
Wallboard, plaster (except gypsum), and mineral wool	110.7	112.3	114.6	118.2	213.6	200.1	221.3	224.9
Lime	77.9	79.0	78.9	84.4	158.3	158.7	163.0	164.8
Marble, granite, slate, and other products	64.3	70.6	70.7	71.5	102.0	102.4	114.1	105.6
Abrasives	213.1	255.8	265.4	270.6	320.2	443.6	458.1	464.8
Asbestos products	110.4	118.4	120.0	125.2	216.9	242.5	252.8	252.5
Nondurable goods								
Textile-mill products and other fiber manufactures [1]	90.2	90.2	90.4	95.4	166.7	159.4	169.9	171.3
Cotton manufactures, except smallwares	102.8	102.9	103.3	108.0	201.0	192.9	209.8	204.4
Cotton smallwares	92.9	97.9	97.8	98.7	166.0	182.3	187.2	175.3
Silk and rayon goods	70.9	70.9	70.5	73.7	138.2	133.9	138.4	132.8
Woolen and worsted manufactures, except dyeing and finishing	91.3	90.0	90.5	97.7	175.4	167.2	177.2	185.1
Hosiery	60.5	60.0	59.6	64.7	101.1	89.0	93.7	103.6
Knitted cloth	88.3	89.0	90.4	92.7	167.5	155.0	163.6	164.5
Knitted outerwear and knitted gloves	93.6	92.0	92.7	101.0	172.1	160.3	172.3	184.5
Knitted underwear	84.3	85.0	86.0	89.0	157.2	153.1	162.0	162.5
Dyeing and finishing textiles, including woolen and worsted	83.6	83.5	84.4	88.8	141.9	139.6	145.0	148.3
Carpets and rugs, wool	69.4	73.6	74.1	78.6	113.7	111.6	131.1	135.4
Hats, fur-felt	63.9	61.9	59.2	63.4	121.0	113.6	109.6	118.5
Jute goods, except felts	95.3	90.1	88.9	92.2	190.3	174.4	171.5	179.7
Cordage and twine	114.2	118.3	117.5	124.7	218.0	217.2	227.5	232.7
Apparel and other finished textile products [1]	99.8	98.9	96.4	110.3	180.3	157.3	167.5	199.1
Men's clothing, not elsewhere classified	82.5	85.0	86.0	95.2	142.2	135.0	151.5	166.3
Shirts, collars, and nightwear	68.8	67.5	68.1	73.4	126.1	110.9	123.9	128.4
Underwear and neckwear, men's	70.3	70.1	71.6	74.8	141.8	124.1	145.5	146.6
Work shirts	97.1	103.9	105.4	109.3	188.3	186.5	196.4	210.0
Women's clothing, not elsewhere classified	74.4	70.1	64.6	79.6	138.4	108.4	109.2	148.4
Corsets and allied garments	74.9	71.6	71.0	77.1	132.2	119.1	122.6	132.6
Millinery [2]	74.5	72.1	67.0	79.4	131.1	112.7	108.4	137.1
Handkerchiefs	54.1	51.2	50.7	58.0	98.2	94.3	93.2	105.1
Curtains, draperies, and bedspreads	57.8	60.4	60.6	77.5	110.4	116.8	121.6	149.9
Housefurnishings, other than curtains, etc	75.5	100.1	101.3	103.8	130.4	171.4	182.3	191.3
Textile bags	120.5	120.1	122.0	114.1	207.5	193.2	208.3	195.0
Leather and leather products [1]	86.3	88.6	89.5	90.1	157.2	157.0	165.0	160.6
Leather	82.1	80.9	81.2	83.5	146.3	141.2	146.6	146.2
Boot and shoe cut stock and findings	86.5	86.3	85.5	82.4	143.4	141.8	147.7	141.6
Boots and shoes	75.5	77.6	77.7	78.9	140.3	141.2	149.0	143.1
Leather gloves and mittens	109.7	113.3	113.3	124.9	196.2	181.9	201.8	224.5
Trunks and suitcases	130.8	156.8	153.3	150.7	212.8	243.9	245.5	236.1
Food [1]	133.4	124.6	123.3	138.5	218.5	198.6	205.8	215.5
Slaughtering and meat packing	105.0	103.2	105.7	125.0	177.6	158.2	175.0	200.3
Butter	132.1	137.1	141.4	124.4	216.2	226.3	236.4	191.6
Condensed and evaporated milk	153.9	162.6	166.7	146.6	261.0	280.5	296.5	240.4
Ice cream	105.9	109.9	112.9	98.2	161.8	161.5	169.0	139.3
Flour	124.4	123.7	121.4	113.3	217.1	210.1	218.3	196.8
Feeds, prepared	149.1	143.9	143.5	128.3	265.8	244.2	258.9	225.9

See footnotes at end of table.

TABLE 3.—*Indexes of Production-Worker Employment and Pay Rolls in Manufacturing Industries*—Continued

[1939 average = 100]

Industry	Employment indexes				Pay-roll indexes			
	Sept. 1945	Aug. 1945	July 1945	Sept. 1944	Sept. 1945	Aug. 1945	July 1945	Sept. 1944
Nondurable goods—Continued								
Food [1]—Continued								
Cereal preparations	129.7	126.8	124.4	114.6	251.3	225.6	225.9	201.4
Baking	108.8	107.9	108.4	110.8	174.3	170.9	174.6	168.7
Sugar refining, cane	92.3	92.1	93.3	105.5	145.3	140.0	145.1	171.7
Sugar, beet	72.5	48.2	41.9	65.6	108.9	72.8	65.8	87.1
Confectionery	102.1	101.0	98.6	113.5	176.4	165.7	164.2	191.6
Beverages, nonalcoholic	120.7	123.0	124.8	140.1	168.4	166.6	177.7	188.3
Malt liquors	153.0	149.1	146.7	146.5	242.6	224.2	230.7	216.1
Canning and preserving	176.9	133.5	123.8	181.8	349.5	249.4	250.2	336.4
Tobacco manufactures [1]	89.1	84.0	83.2	88.0	174.8	148.8	151.4	163.0
Cigarettes	127.1	122.9	123.5	126.1	211.1	193.9	200.5	202.3
Cigars	67.6	61.6	59.9	67.6	149.6	114.6	114.6	137.6
Tobacco (chewing and smoking) and snuff	95.2	91.6	91.6	87.4	164.6	148.8	148.8	143.8
Paper and allied products [1]	114.7	114.2	113.7	116.7	195.5	184.6	193.5	193.1
Paper and pulp	103.3	104.1	103.4	105.7	180.5	171.7	180.7	180.0
Paper goods, other	112.4	111.9	111.4	112.8	184.0	179.7	181.8	182.0
Envelopes	109.6	105.4	105.8	109.1	174.5	160.4	165.5	166.4
Paper bags	112.6	105.2	110.7	118.5	205.7	180.2	198.5	201.6
Paper boxes	111.1	109.6	108.9	112.4	185.5	171.1	180.6	180.0
Printing, publishing, and allied industries [1]	98.8	98.0	96.8	97.1	147.7	140.0	137.8	136.0
Newspapers and periodicals	94.5	92.7	90.5	92.1	129.8	128.1	119.7	119.6
Printing, book and job	105.4	105.4	103.8	103.2	166.9	151.9	155.1	151.5
Lithographing	92.8	92.8	93.2	92.2	140.1	130.6	134.6	132.8
Bookbinding	102.0	104.7	105.0	105.3	184.7	176.1	181.3	177.1
Chemicals and allied products [1]	155.6	190.0	203.7	205.7	267.6	325.7	363.0	361.0
Paints, varnishes, and colors	105.9	103.0	102.9	104.9	168.1	163.0	168.8	166.0
Drugs, medicines, and insecticides	171.2	181.1	182.5	178.8	265.0	270.7	272.6	265.0
Perfumes and cosmetics	119.7	121.2	119.8	115.5	179.1	165.5	176.9	167.3
Soap	97.6	95.6	95.5	99.1	170.2	160.3	157.8	171.3
Rayon and allied products	110.6	110.0	111.2	109.2	177.2	181.6	184.3	176.1
Chemicals, not elsewhere classified	160.8	161.2	162.4	168.1	274.8	288.2	291.8	292.8
Explosives and safety fuses	505.9	1105.4	1207.2	1151.9	759.3	1607.4	1879.8	1781.6
Compressed and liquefied gases	140.1	148.2	148.4	148.5	230.8	266.6	270.2	262.9
Ammunition, small-arms	296.6	889.1	1345.7	1168.8	569.5	1469.9	2636.2	2332.2
Fireworks	303.5	1237.0	1510.1	2382.8	818.5	3258.6	4070.7	6368.2
Cottonseed oil	95.4	75.6	76.2	107.5	199.7	144.1	150.8	220.9
Fertilizers	111.0	106.2	104.4	101.7	262.1	241.8	247.4	232.3
Products of petroleum and coal [1]	122.6	127.3	127.4	126.0	209.4	228.6	233.4	220.7
Petroleum refining	119.4	127.5	127.6	124.6	200.6	224.3	227.7	213.3
Coke and byproducts [2]	104.9	101.5	101.1	105.5	185.7	189.9	194.5	189.9
Paving materials	71.4	70.4	72.5	66.8	142.0	135.1	148.6	137.9
Roofing materials	122.0	116.0	117.2	117.9	208.7	205.5	216.9	219.0
Rubber products [1]	138.9	148.4	151.1	160.7	232.4	249.5	281.3	294.5
Rubber tires and inner tubes	156.7	159.3	162.1	170.6	238.8	249.7	286.8	300.8
Rubber boots and shoes	99.8	113.0	113.1	125.0	182.7	211.6	214.9	226.6
Rubber goods, other	110.1	124.4	127.8	136.0	192.4	212.8	237.5	248.3
Miscellaneous industries [1]	129.2	155.8	158.5	168.5	227.7	279.2	300.9	324.0
Instruments (professional and scientific) and fire-control equipment	235.3	449.4	473.3	556.6	370.6	797.9	835.0	1038.6
Photographic apparatus	120.9	154.6	154.9	161.6	190.6	250.1	259.6	268.4
Optical instruments and ophthalmic goods	167.2	182.1	178.8	201.7	272.3	283.0	294.0	344.0
Pianos, organs, and parts	66.6	96.7	101.7	89.1	109.4	164.2	197.9	180.4
Games, toys, and dolls	68.2	74.7	77.2	90.3	123.2	116.5	151.2	181.8
Buttons	79.9	80.9	82.4	82.2	164.8	148.1	166.0	167.0
Fire extinguishers	322.2	411.3	420.7	549.1	767.9	786.8	910.5	1126.3

[1] Indexes for the major industry groups have been adjusted to levels indicated by the final 1943 data made available by the Bureau of Employment Security of the Federal Security Agency. Indexes for 15 major groups are not comparable with those published in mimeographed releases dated prior to September 1945 or the October 1945 issue of the Monthly Labor Review. Comparable indexes from January 1939 available upon request. Five major groups—furniture and finished lumber products; stone, clay and glass products; tobacco manufactures; chemicals and allied products; and products of petroleum and coal—needed no further adjustment and are therefore comparable with the data previously published.

[2] Revisions have been made as follows in the indexes for earlier months:

Millinery.—June 1945 pay-roll index to 92.7.

Coke and byproducts.—March and June 1945 pay-roll indexes to 184.0 and 181.7, respectively.

TABLE 4.—*Estimated Number of Production Workers in Selected Nonmanufacturing Industries*

Industry	Estimated number of production workers (in thousands)			
	Sept. 1945	Aug. 1945	July 1945	Sept. 1944
Mining:				
Anthracite	64.3	64.1	64.3	67.5
Bituminous coal	325	323	323	348
Metal	63.7	64.5	65.8	72.7
Iron	23.7	24.1	24.1	26.4
Copper	18.8	19.4	20.2	22.5
Lead and zinc	13.2	13.2	13.6	15.0
Gold and silver	5.5	5.2	5.2	5.6
Miscellaneous	2.5	2.6	2.7	3.2
Telephone [1] [2]	425	423	419	407
Telegraph [2] [3]	45.6	45.0	44.9	46.0
Electric light and power [1]	206	205	204	202
Street railways and busses [1]	229	227	226	230
Hotels (year-round) [1]	362	354	353	352
Power laundries	(4)	(4)	(4)	(4)
Cleaning and dyeing	(4)	(4)	(4)	(4)
Class I steam railroads [5]	1,414	1,449	1,451	1,426
Water transportation [6]	168	164	163	136

[1] Data include salaried personnel.
[2] Data for 1945 not previously published: April 404, May 406, and June 411.
[3] Excludes messengers, and approximately 6,000 employees of general and divisional headquarters, and of cable companies. Data include salaried personnel.
[4] The change in definition from "wage earner" to "production worker" in the power laundries and cleaning and dyeing industries results in the omission of driver-salesmen. This causes a significant difference in the data. New series are being prepared.
[5] Source: Interstate Commerce Commission. Data include salaried personnel.
[6] Based on estimates prepared by the U. S. Maritime Commission covering employment on active deep-sea American-flag steam and motor merchant vessels of 1,000 gross tons and over. Excludes vessels under bareboat charter to or owned by the Army or Navy.

TABLE 5.—*Indexes of Employment and Pay Rolls in Selected Nonmanufacturing Industries*

[1939 average=100]

Industry	Employment indexes				Pay-roll indexes			
	Sept. 1945	Aug. 1945	July 1945	Sept. 1944	Sept. 1945	Aug. 1945	July 1945	Sept. 1944
Mining:								
Anthracite	77.6	77.4	77.6	81.5	149.8	148.0	142.7	150.1
Bituminous coal	87.6	87.1	87.1	93.9	199.7	188.0	190.7	207.8
Metal	72.2	73.1	74.6	82.4	116.4	114.2	121.1	130.8
Iron	118.1	119.4	119.6	131.3	197.5	200.8	201.6	212.0
Copper	78.8	81.3	84.9	94.2	127.5	120.8	141.7	153.3
Lead and zinc	84.6	85.0	87.2	96.3	159.4	157.2	161.1	176.7
Gold and silver	22.3	21.2	21.0	22.7	28.4	26.1	26.0	28.7
Miscellaneous	63.5	65.8	68.1	81.1	105.4	105.8	113.8	136.7
Quarrying and nonmetallic	82.5	81.7	81.3	84.4	159.2	155.9	161.9	158.9
Crude-petroleum production [1]	83.6	84.2	83.8	83.0	137.5	137.8	135.7	135.4
Public utilities:								
Telephone [2]	133.8	133.1	131.9	128.2	185.4	195.7	177.7	159.4
Telegraph	121.2	119.4	119.3	122.2	177.2	200.4	175.0	177.9
Electric light and power	84.5	84.1	83.6	82.6	120.6	120.7	119.6	115.6
Street railways and busses	118.0	117.3	116.8	118.6	177.1	178.7	177.1	168.9
Wholesale trade	97.0	95.8	94.9	95.0	145.6	141.3	144.7	136.4
Retail trade	97.6	93.8	94.9	96.6	138.7	132.1	136.4	128.0
Food	102.0	99.9	100.0	106.3	145.8	144.8	145.5	139.2
General merchandise	110.4	104.7	107.9	109.2	150.0	141.2	148.0	138.9
Apparel	106.4	96.7	99.9	108.2	154.7	139.6	150.0	146.6
Furniture and housefurnishings	63.1	61.7	61.8	62.5	91.4	88.7	91.1	86.9
Automotive	72.3	69.6	69.4	65.7	113.5	104.6	108.3	96.8
Lumber and building materials	96.1	91.8	92.2	90.0	146.7	133.4	138.7	131.3
Hotels (year-round) [3]	112.2	109.9	109.4	109.0	177.2	172.0	171.2	159.0
Power laundries	106.5	106.1	108.3	106.8	168.3	160.5	169.7	159.5
Cleaning and dyeing	122.3	117.3	121.2	118.4	199.2	179.9	197.7	185.5
Class I steam railroads [4]	143.1	146.7	146.9	144.3	(5)	(5)	(5)	(5)
Water transportation [6]	320.5	313.4	310.0	258.7	669.6	664.0	755.5	602.6

[1] Does not include well drilling or rig building.
[2] Data not previously published for April, May, and June 1945: employment indexes, 127.3, 127.8, 129.5; pay-roll indexes, 163.2, 166.1, 172.6.
[3] Cash payments only; additional value of board, room, and tips, not included.
[4] Source: Interstate Commerce Commission.
[5] Not available.
[6] Based on estimates prepared by the U. S. Maritime Commission covering employment on active deep-sea American-flag steam and motor merchant vessels of 1,000 gross tons and over. Excludes vessels under bareboat charter to or owned by the Army or Navy.

AVERAGE EARNINGS AND HOURS

Average weekly earnings and hours and average hourly earnings for July, August, and September 1945, where available, are given in table 6 for both manufacturing and nonmanufacturing industries. (For trend of earnings since 1939, see page 1200 of this issue.)

The average weekly earnings for individual industries are computed by dividing the weekly pay rolls in the reporting establishments by the total number of full- and part-time employees reported. As not all reporting establishments supply information on man-hours, the average hours worked per week and average hourly earnings shown in this table are necessarily based on data furnished by a slightly smaller number of reporting firms. Because of variation in the size and composition of the reporting sample, the average hours per week, average hourly earnings, and average weekly earnings shown may not be strictly comparable from month to month. The sample, however, is believed to be sufficiently adequate in virtually all instances to indicate the general movement of earnings and hours over the period shown. The average weekly hours and hourly earnings for the manufacturing groups are weighted arithmetic means of the averages for the individual industries, estimated employment being used as weights for weekly hours and estimated aggregate hours as weights for hourly earnings. The average weekly earnings for these groups are computed by multiplying the average weekly hours by the corresponding average hourly earnings.

TABLE 6.—*Earnings and Hours in Manufacturing and Nonmanufacturing Industries*

MANUFACTURING

Industry	Average weekly earnings [1]			Average weekly hours [1]			Average hourly earnings [1]		
	Sept. 1945	Aug. 1945	July 1945	Sept. 1945	Aug. 1945	July 1945	Sept. 1945	Aug. 1945	July 1945
							Cents	*Cents*	*Cents*
All manufacturing	$40.88	$41.75	$45.45	41.4	40.7	44.0	98.8	102.5	103.3
Durable goods	43.89	45.79	50.66	40.9	41.1	44.9	107.3	111.3	112.7
Nondurable goods	37.85	36.62	38.59	41.9	40.3	42.8	90.4	90.9	90.2
Durable goods									
Iron and steel and their products	45.60	46.36	50.41	41.7	41.7	45.2	109.3	111.2	111.4
Blast furnaces, steel works, and rolling mills	48.35	50.84	54.89	41.0	42.0	45.1	117.9	121.0	121.8
Gray-iron and semisteel castings	48.45	47.17	51.22	45.0	42.8	46.5	108.4	110.2	110.2
Malleable iron castings	46.04	42.33	49.01	42.7	38.6	45.3	108.2	109.6	108.2
Steel castings	44.37	45.34	48.69	39.4	39.9	43.0	112.3	113.4	113.2
Cast-iron pipe and fittings	39.64	37.74	42.25	43.8	41.9	46.9	90.4	90.0	90.1
Tin cans and other tinware	40.31	38.96	41.74	44.1	43.1	46.1	91.7	90.3	90.8
Wirework	45.10	45.09	49.64	43.4	42.8	46.6	103.6	105.3	106.7
Cutlery and edge tools	40.77	38.94	44.35	43.7	40.9	45.6	94.0	95.3	97.4
Tools (except edge tools, machine tools, files, and saws)	41.99	42.83	45.95	43.2	43.6	46.6	97.3	98.3	98.6
Hardware	40.80	40.05	44.70	43.2	41.0	45.2	94.5	97.7	98.9
Plumber's supplies	44.31	41.98	47.20	42.0	40.2	44.5	106.1	104.4	106.0
Stoves, oil burners, and heating equipment, not elsewhere classified	43.32	41.67	46.77	42.7	40.1	44.4	101.0	103.4	105.3
Steam and hot-water heating apparatus and steam fittings	45.25	44.58	47.78	43.1	42.3	45.3	104.5	105.4	105.4
Stamped and enameled ware and galvanizing	40.50	40.78	44.78	41.2	40.2	43.5	98.7	101.4	102.8
Fabricated structural and ornamental metalwork	43.34	47.26	50.23	41.0	43.3	45.8	105.1	109.1	109.7
Metal doors, sash, frames, molding, and trim	45.47	45.80	51.77	42.3	42.9	45.9	107.5	106.7	112.7
Bolts, nuts, washers, and rivets	40.17	47.88	47.42	39.3	44.8	44.8	101.9	106.5	106.0
Forgings, iron and steel	47.27	47.62	56.77	39.8	38.5	45.0	118.7	123.5	126.1

See footnotes at end of table.

TABLE 6.—*Earnings and Hours in Manufacturing and Nonmanufacturing Industries*—Continued

MANUFACTURING—Continued

Industry	Average weekly earnings [1]			Average weekly hours [1]			Average hourly earnings [1]		
	Sept. 1945	Aug. 1945	July 1945	Sept. 1945	Aug. 1945	July 1945	Sept. 1945	Aug. 1945	July 1945
Durable goods—Continued									
							Cents	*Cents*	*Cents*
Iron and steel and their products—Con.									
Screw-machine products and wood screws	$45.04	$45.72	$49.66	42.5	43.4	46.7	105.2	105.4	106.2
Steel barrels, kegs, and drums	34.40	37.55	46.12	35.3	36.6	45.0	95.6	101.1	102.4
Firearms	46.16	52.14	58.11	40.9	42.1	46.2	112.9	123.9	125.8
Electrical machinery	41.25	42.72	47.91	40.3	41.2	45.3	102.3	103.6	105.7
Electrical equipment	41.97	43.59	49.66	40.0	40.8	45.4	103.8	106.5	109.5
Radios and phonographs	37.44	37.21	41.75	40.9	40.9	45.1	91.3	90.9	92.5
Communication equipment	43.52	45.92	47.69	41.0	43.2	45.2	106.1	105.5	105.1
Machinery, except electrical	48.04	48.41	53.58	42.9	42.7	46.7	111.9	113.4	114.8
Machinery and machine-shop products	47.13	47.81	52.57	42.7	42.7	46.6	110.2	111.8	112.8
Engines and turbines	42.35	46.47	56.23	36.6	39.4	45.5	115.9	118.9	123.6
Tractors	51.87	51.15	53.71	44.3	44.0	46.0	116.9	116.2	116.7
Agricultural machinery, excluding tractors	49.14	48.16	53.69	44.3	42.9	46.9	110.9	112.3	114.5
Machine tools	51.94	53.63	56.37	45.1	45.6	47.7	115.2	117.6	118.2
Machine-tool accessories	50.72	50.33	57.24	42.2	42.2	46.4	121.4	120.1	123.8
Textile machinery	47.91	44.34	48.22	47.0	43.6	46.9	101.9	101.6	102.8
Typewriters	43.33	40.13	48.74	43.9	39.3	47.2	98.8	102.1	103.2
Cash registers, adding and calculating machines	49.90	51.44	59.38	42.0	43.4	48.3	119.2	118.8	123.9
Washing machines, wringers and driers, domestic	43.27	43.70	46.08	43.9	42.8	44.9	98.6	102.0	102.7
Sewing machines, domestic and industrial	55.13	52.13	55.80	49.5	47.4	49.6	112.4	110.7	113.0
Refrigerators and refrigeration equipment	47.22	39.05	50.53	43.0	35.5	45.6	110.3	110.4	111.2
Transportation equipment, except automobiles	48.38	54.24	59.63	38.5	41.9	45.8	125.8	129.4	130.1
Locomotives	47.68	51.56	60.45	38.5	40.9	45.6	123.9	126.2	132.4
Cars, electric- and steam-railroad	44.15	46.09	50.32	41.2	40.4	43.5	107.1	114.2	115.6
Aircraft and parts, excluding aircraft engines	44.02	48.58	54.87	37.3	40.8	45.9	117.6	118.7	119.7
Aircraft engines	44.05	48.30	56.16	37.1	38.1	43.6	118.1	126.9	128.7
Shipbuilding and boatbuilding	50.92	60.53	64.62	38.7	43.7	46.6	131.6	138.5	138.8
Motorcycles, bicycles, and parts	41.44	49.88	52.77	41.3	46.7	47.6	101.0	106.8	110.9
Automobiles	44.81	41.70	53.29	36.5	33.5	42.3	122.8	124.5	126.0
Nonferrous metals and their products	44.46	46.06	48.81	42.6	43.3	45.7	104.4	106.5	106.8
Smelting and refining, primary, of nonferrous metals	47.90	50.22	51.55	44.9	45.8	47.0	106.7	109.7	109.6
Alloying and rolling and drawing of nonferrous metals, except aluminum	47.92	51.82	51.79	43.9	46.7	46.3	109.3	111.4	111.9
Clocks and watches	36.39	39.41	43.64	38.7	41.7	45.7	94.0	94.6	95.7
Jewelry (precious metals) and jewelers' findings	44.96	41.43	42.24	44.2	42.3	43.4	101.6	97.3	97.4
Silverware and plated ware	47.79	45.93	46.58	46.5	45.1	45.4	102.8	101.9	102.6
Lighting equipment	40.61	34.04	47.06	40.0	32.7	44.4	101.4	104.0	106.0
Aluminum manufactures	40.13	45.93	47.92	39.4	43.2	45.0	101.8	106.3	106.4
Lumber and timber basic products	33.54	32.91	33.52	40.9	40.5	41.4	81.9	81.3	81.0
Sawmills and logging camps	32.53	32.13	32.20	40.5	40.2	40.6	80.4	79.9	79.4
Planing and plywood mills	36.92	35.77	37.90	42.4	41.3	44.0	86.9	85.9	85.8
Furniture and finished lumber products	35.35	33.97	36.89	42.4	40.6	43.3	83.3	83.6	85.2
Furniture	35.39	34.55	37.35	42.0	40.3	42.8	85.0	85.8	87.4
Caskets and other morticians' goods	38.06	33.48	40.17	43.9	38.3	44.8	86.8	86.9	90.2
Wood preserving	36.34	33.92	34.99	43.9	42.4	44.3	82.4	79.7	79.0
Stone, clay, and glass products	39.05	39.08	40.38	41.8	41.6	43.4	93.4	93.9	93.1
Glass and glassware	39.39	38.97	39.80	39.8	39.5	40.7	99.2	98.9	97.8
Glass products made from purchased glass	36.15	34.42	35.01	42.1	41.2	42.5	86.4	82.8	82.2
Cement	43.32	44.91	46.43	45.0	46.5	48.0	96.2	96.5	96.6
Brick, tile, and terra cotta	34.70	33.47	35.59	40.9	40.4	42.7	84.1	82.3	82.3
Pottery and related products	35.60	35.41	36.24	39.7	39.4	40.4	90.9	90.4	90.6
Gypsum	45.88	44.55	45.97	49.9	47.6	49.0	92.0	93.5	93.9
Lime	39.73	39.54	40.65	47.2	48.1	48.9	84.0	81.3	82.0
Marble, granite, slate, and other products	41.31	37.64	41.96	42.3	39.9	44.1	97.1	94.0	95.6
Abrasives	42.25	48.75	48.40	41.9	45.1	47.6	100.7	108.1	101.8
Asbestos products	45.48	47.40	48.91	45.9	46.8	47.9	99.1	101.2	102.2

See footnotes at end of table.

TABLE 6.—*Earnings and Hours in Manufacturing and Nonmanufacturing Industries*—Continued

MANUFACTURING—Continued

Industry	Average weekly earnings [1]			Average weekly hours [1]			Average hourly earnings [1]		
	Sept. 1945	Aug. 1945	July 1945	Sept. 1945	Aug. 1945	July 1945	Sept. 1945	Aug. 1945	July 1945
Nondurable goods									
							Cents	Cents	Cents
Textile-mill products and other fiber manufactures	$31.00	$29.64	$31.50	40.6	38.4	41.3	76.3	77.1	76.3
Cotton manufactures, except smallwares	28.32	27.13	29.38	40.6	38.3	41.7	69.8	70.8	70.5
Cotton smallwares	33.22	34.62	35.60	41.7	42.1	43.9	79.6	82.2	81.4
Silk and rayon goods	31.12	30.07	31.26	40.9	39.3	41.5	76.2	76.6	75.3
Woolen and worsted manufactures, except dyeing and finishing	35.84	34.59	36.39	41.4	39.5	41.9	86.6	87.7	86.9
Hosiery	30.61	27.29	28.90	37.5	34.2	36.5	81.6	79.8	79.2
Knitted cloth	35.22	32.32	33.77	43.8	41.4	43.2	79.9	78.0	77.6
Knitted outerwear and knitted gloves	30.64	28.82	30.81	38.1	36.7	39.3	79.3	78.0	78.1
Knitted underwear	27.42	26.65	27.77	39.0	37.3	39.6	70.3	71.0	69.6
Dyeing and finishing textiles, including woolen and worsted	34.98	34.49	35.44	44.0	41.8	44.2	79.4	82.5	80.1
Carpets and rugs, wool	37.80	35.00	40.82	41.5	38.2	42.8	91.2	91.8	95.5
Hats, fur-felt	44.23	42.86	43.24	41.5	39.3	41.2	108.1	110.6	108.2
Jute goods, except felts	35.67	34.60	34.50	45.1	44.0	43.9	79.2	78.7	78.5
Cordage and twine	34.04	32.63	34.42	44.2	42.5	44.6	76.2	76.6	77.0
Apparel and other finished textile products	31.82	27.98	30.38	36.4	33.1	36.7	87.5	84.6	82.9
Men's clothing, not elsewhere classified	32.54	30.00	33.32	36.5	33.3	37.2	89.2	90.0	89.1
Shirts, collars, and nightwear	25.53	23.03	25.52	36.6	33.3	36.9	70.0	70.0	69.2
Underwear and neckwear, men's	26.98	23.72	27.16	35.8	31.7	36.7	75.4	74.8	73.9
Work shirts	20.97	19.46	20.20	35.8	33.5	35.5	58.5	57.9	56.8
Women's clothing, not elsewhere classified	40.87	33.75	36.72	35.6	31.5	35.2	111.9	105.2	102.2
Corsets and allied garments	30.71	28.92	29.99	39.1	37.2	40.1	78.7	77.9	74.9
Millinery [2]	42.92	38.11	39.44	33.6	30.8	32.6	104.3	101.8	100.3
Handkerchiefs	23.75	24.20	24.21	35.2	35.5	36.1	67.6	68.2	66.8
Curtains, draperies, and bedspreads	25.54	25.83	26.84	35.2	35.3	37.0	72.1	73.1	72.4
Housefurnishings other than curtains, etc	29.81	29.56	31.22	39.2	37.2	39.4	75.5	79.2	78.9
Textile bags	30.29	28.28	30.00	40.8	39.3	41.1	74.2	71.9	73.0
Leather and leather products	34.64	33.62	35.47	40.6	39.3	41.7	85.2	85.7	85.1
Leather	44.13	43.18	44.91	45.1	44.1	46.1	98.1	97.9	97.7
Boot and shoe cut stock and findings	33.44	33.04	34.69	40.8	39.9	42.2	82.3	83.3	82.8
Boots and shoes	32.95	32.24	34.00	39.9	38.5	41.1	82.1	83.2	82.3
Leather gloves and mittens	30.55	27.48	30.39	36.9	34.2	36.8	83.2	80.2	82.4
Trunks and suitcases	34.15	32.68	33.62	39.1	39.0	40.0	87.4	83.4	84.0
Food	39.34	38.13	39.98	44.7	43.3	45.8	88.0	88.2	87.4
Slaughtering and meat packing	45.81	41.57	45.08	48.0	44.4	47.7	95.8	94.0	94.6
Butter	36.42	36.71	37.10	47.2	48.4	48.9	76.1	75.3	75.3
Condensed and evaporated milk	39.35	39.97	41.18	49.7	52.0	53.3	79.1	76.8	77.2
Ice cream	41.81	40.19	41.15	48.0	47.8	49.1	83.8	81.7	81.4
Flour	44.56	43.14	45.26	49.2	48.4	50.9	89.2	88.2	89.0
Cereal preparations	49.22	45.20	46.15	48.6	45.4	47.2	101.1	99.5	97.8
Baking	39.80	39.36	40.27	45.8	45.4	46.3	87.9	87.6	87.1
Sugar refining, cane	37.62	36.32	37.20	43.6	41.9	43.3	86.4	86.7	85.8
Sugar, beet	37.45	37.87	39.47	36.7	38.4	37.9	102.0	98.7	104.2
Confectionery	31.51	30.18	30.75	41.0	39.4	40.6	77.5	76.6	75.9
Beverages, nonalcoholic	36.87	35.77	37.50	43.9	43.3	45.3	84.1	83.2	82.8
Malt liquors	56.00	53.13	55.53	47.3	45.3	47.2	118.0	116.9	117.4
Canning and preserving	31.89	30.11	32.63	40.6	36.9	42.0	79.0	82.3	78.2
Tobacco manufactures	33.01	29.85	30.73	41.9	39.0	41.0	78.7	76.5	74.9
Cigarettes	35.45	33.55	34.53	42.3	41.1	42.8	83.5	81.7	80.7
Cigars	31.41	26.49	27.18	41.7	37.1	39.2	75.4	71.0	69.1
Tobacco (chewing and smoking) and snuff	30.11	28.30	28.28	41.6	37.9	40.1	72.4	74.6	70.5
Paper and allied products	40.84	38.70	40.78	45.9	44.0	46.3	89.1	87.9	88.1
Paper and pulp	44.20	41.77	44.26	47.7	45.8	48.5	92.6	91.1	91.3
Envelopes	38.12	36.44	37.44	44.9	43.4	44.6	84.9	84.0	83.9
Paper bags	37.50	35.17	36.49	45.0	43.2	44.3	83.2	80.9	82.9
Paper boxes	36.86	34.44	36.70	43.6	41.4	43.9	84.4	83.3	83.7
Printing, publishing, and allied industries	48.97	46.52	46.62	42.3	40.7	41.5	115.9	114.2	112.3
Newspapers and periodicals	52.41	52.93	50.64	39.5	39.7	38.6	130.7	131.1	129.2
Printing, book and job	47.58	43.44	45.00	43.8	41.0	42.9	109.4	106.3	105.2
Lithographing	50.60	47.13	48.57	44.5	42.9	44.4	113.6	109.9	109.3
Chemicals and allied products	43.63	43.53	45.03	43.6	43.4	45.1	100.2	100.3	99.9
Paints, varnishes, and colors	46.49	46.34	48.06	46.2	46.6	48.2	100.7	99.8	99.8
Drugs, medicines, and insecticides	36.53	35.25	35.40	41.9	41.3	41.9	87.2	85.6	84.4
Soap	49.83	47.90	47.02	48.0	47.6	48.1	103.7	100.6	98.1

See footnotes at end of table.

TABLE 6.—*Earnings and Hours in Manufacturing and Nonmanufacturing Industries*—Continued

MANUFACTURING—Continued

Industry	Average weekly earnings [1]			Average weekly hours [1]			Average hourly earnings [1]		
	Sept. 1945	Aug. 1945	July 1945	Sept. 1945	Aug. 1945	July 1945	Sept. 1945	Aug. 1945	July 1945
Nondurable goods—Continued									
Chemicals and allied products—Continued							*Cents*	*Cents*	*Cents*
Rayon and allied products	$38.85	$40.33	$40.46	41.1	42.3	43.0	94.5	95.3	94.1
Chemicals, not elsewhere classified	51.49	53.96	54.11	44.4	46.5	47.1	116.3	116.0	114.9
Explosives and safety fuses	46.26	44.83	48.00	41.4	42.3	44.9	111.8	105.9	106.9
Ammunition, small-arms	43.71	37.38	44.29	41.8	38.2	44.8	103.8	97.8	98.9
Cottonseed oil	28.66	26.09	27.09	50.7	45.0	47.1	56.6	57.9	57.5
Fertilizers	33.84	32.51	33.66	45.2	43.6	46.2	74.9	74.5	72.9
Products of petroleum and coal	54.90	57.22	58.01	45.2	46.8	47.7	121.6	122.4	121.7
Petroleum refining	57.85	59.77	60.57	45.2	46.9	47.3	128.4	128.0	127.7
Coke and byproducts [2]	48.64	51.20	52.65	45.0	46.4	48.2	108.4	110.3	109.3
Roofing materials	43.99	45.55	47.56	45.0	46.6	49.2	97.8	97.7	96.6
Rubber products	46.52	46.76	51.81	42.3	41.8	45.5	110.1	111.9	113.8
Rubber tires and inner tubes	51.36	52.81	59.59	41.7	41.5	46.0	122.8	126.9	129.6
Rubber boots and shoes	41.19	42.21	42.70	45.0	45.1	45.4	91.7	93.7	94.1
Rubber goods, other	40.77	40.02	43.62	42.3	41.3	44.8	96.4	96.9	97.4
Miscellaneous industries	40.14	40.72	43.24	42.2	41.8	44.0	95.1	97.5	98.3
Instruments (professional and scientific) and fire-control equipment	45.82	51.39	51.12	40.6	44.4	44.0	112.4	116.2	116.5
Pianos, organs, and parts	39.90	41.34	47.19	41.4	40.8	45.8	97.0	101.7	103.6

NONMANUFACTURING

Mining:							*Cents*	*Cents*	*Cents*
Anthracite	$49.89	$49.44	$47.47	36.7	37.0	39.4	134.5	133.1	121.9
Bituminous coal	52.73	49.90	50.66	42.3	40.1	40.8	125.2	124.9	125.4
Metal	45.35	44.01	45.65	43.0	42.0	43.9	105.5	104.9	103.9
Quarrying and nonmetallic	41.91	41.25	42.91	46.5	46.6	48.0	90.0	88.5	89.5
Crude-petroleum production	55.23	54.93	54.40	45.1	46.3	45.0	122.1	118.6	120.9
Public utilities:									
Telephone [3]	40.46	42.96	39.36	41.1	44.1	41.8	98.8	97.7	94.4
Telegraph [4]	37.87	43.44	37.98	45.9	48.2	46.0	82.5	90.1	82.6
Electric light and power	49.91	50.71	50.34	43.1	44.3	44.4	115.8	113.9	114.6
Street railways and busses	50.54	51.59	51.21	51.3	52.3	51.6	98.3	97.4	97.9
Wholesale trade	43.85	43.27	44.92	42.4	42.4	43.1	102.5	101.3	103.7
Retail trade	28.95	29.01	29.40	40.7	41.2	41.9	78.0	77.2	77.3
Food	34.20	34.68	34.89	41.3	42.6	43.0	77.9	77.4	76.5
General merchandise	23.89	23.91	24.09	37.1	38.0	38.4	63.8	63.4	63.6
Apparel	30.05	29.99	31.55	37.6	37.5	38.5	82.2	81.9	82.9
Furniture and housefurnishings	39.74	39.49	40.21	44.0	43.5	44.3	92.5	92.3	93.5
Automotive	44.82	42.58	44.05	46.5	45.7	46.8	96.5	93.8	94.4
Lumber and building materials	39.24	37.66	38.86	43.3	42.0	43.7	92.2	90.4	90.8
Hotels (year-round) [5]	24.79	24.37	24.40	43.4	43.7	44.0	56.7	55.5	54.7
Power laundries [6]	28.91	27.68	28.69	43.4	42.4	44.0	66.1	64.9	65.6
Cleaning and dyeing [6]	33.00	31.14	32.86	43.0	41.5	44.2	77.1	74.6	75.0
Brokerage [2]	60.69	59.10	64.23	(7)	(7)	(7)	(7)	(7)	(7)
Insurance	46.73	46.73	48.11	(7)	(7)	(7)	(7)	(7)	(7)
Private building construction	53.11	55.79	55.57	38.1	40.3	40.1	139.2	138.3	138.7

[1] These figures are based on reports from cooperating establishments covering both full- and part-time employees who worked during any part of one pay period ending nearest the 15th of the month. As not all reporting firms furnish man-hour data, average hours and average hourly earnings for individual industries are based on a slightly smaller sample than are weekly earnings. Data for the current and immediately preceding months are subject to revision.

[2] Revisions have been made as follows in the data for earlier months:
Millinery.—June 1945 to $34.30 and 30.0 hours.
Coke and byproducts.—March and June 1945 to $49.51 and $49.53; 47.5 and 46.4 hours, respectively.
Brokerage.—March 1945 to $64.57.

[3] New series established with April 1945 not comparable with previously published data. Data for April, May, and June 1945 are $37.50, $37.91 and $38.87; 40.6, 41.1 and 41.4 hours; 92.6, 92.6 and 94.1 cents. April 1945 data comparable with previously published series are $40.72, 42.9 hours, and 95.2 cents

[4] Excludes messengers and approximately 6,000 employees of general and divisional headquarters and of cable companies.

[5] Cash payments only; additional value of board, room, and tips, not included.

[6] New series; not comparable with previously published data.
Power laundries.—Comparable June 1945 data: $28.39 and 65.7 cents.
Cleaning and dyeing.—Comparable June 1945 data: 75.7 cents.

[7] Not available.

Labor Force, October 1945

UNEMPLOYMENT declined by 150,000 between September and October to the level of 1,500,000, according to the Bureau of the Census sample Monthly Report on the Labor Force. At the same time, employment rose by 610,000 and the civilian labor force increased by 460,000 to reach 53,360,000.

In spite of continued lay-offs from war plants and demobilization of servicemen, a slight drop in unemployment took place between September and October. Many unemployed persons found jobs during the month in reconverted war plants and in expanding nonwar industries. The fact that substantial numbers of discharged veterans were temporarily not seeking work also minimized the unemployment total in October. The volume of unemployment in October, however, was 550,000 greater than in August and may be expected to rise in the months ahead as military demobilization reaches larger proportions.

Most of the employment gain between September and October occurred in nonagricultural industry. Nonfarm employment increased by 540,000 during the month to reach 42,990,000. Since the end of the war, however, nonagricultural employment has declined by 1,440,000.

Agricultural employment showed a small seasonal increase of 70,000 between September and October to reach a total of 8,870,000.

Total Labor Force in the United States, Classified by Employment Status, Hours Worked, and Sex, September and October 1945

[Source: U. S. Department of Commerce, Bureau of the Census]

Item	Estimated number (in thousands) of persons 14 years of age and over [1]					
	Total, both sexes		Male		Female	
	September	October	September	October	September	October
Total labor force [2]	64,790	64,000	45,870	45,240	18,920	18,760
Civilian labor force	52,900	53,360	34,250	34,840	18,650	18,520
Unemployment	1,650	1,500	930	880	720	620
Employment	51,250	51,860	33,320	33,960	17,930	17,900
Nonagricultural	42,450	42,990	26,660	27,280	15,790	15,710
Worked 35 hours or more	29,890	35,380	20,490	23,520	9,400	11,860
Worked 15–34 hours	9,070	4,760	4,460	2,160	4,610	2,600
Worked 1–14 hours [3]	1,250	1,130	450	440	800	690
With a job but not at work [4]	2,240	1,720	1,260	1,160	980	560
Agricultural	8,800	8,870	6,660	6,680	2,140	2,190
Worked 35 hours or more	6,550	6,910	5,570	5,700	980	1,210
Worked 15–34 hours	1,810	1,660	810	770	1,000	890
Worked 1–14 hours [3]	220	180	130	100	(*)	(*)
With a job but not at work [4]	220	120	150	110	(*)	(*)

[1] Estimates are subject to sampling variation which may be large in cases where the quantities shown are relatively small. Therefore, the smaller estimates should be used with caution; those under 100,000 are not presented in the tables but are indicated by an asterisk (*). All data exclude persons in institutions.

[2] Total labor force consists of the civilian labor force and the armed forces. Estimates of the armed forces during the census week are projected from data on net strength as of the first of the month.

[3] Excludes persons engaged only in incidental unpaid family work (less than 15 hours); these persons are classified as not in the labor force.

[4] Includes persons who had a job or business, but who did not work during the census week because of illness, bad weather, vacation, labor dispute, or because of temporary lay-off with definite instructions to return to work within 30 days of lay-off. Does not include unpaid family workers.

Recent Publications of Labor Interest

December 1945

Cooperative Movement

A cooperative health association in Spanish speaking villages, or The organization of the Taos County Cooperative Health Association, [New Mexico]. By Charles P. Loomis. (In American Sociological Review, Menasha, Wis., April 1945, pp. 149–157. $1.)

Deals with sociological aspects (racial divisions, folk and religious beliefs, settlement pattern, social attitudes, and physical characteristics) of the membership of the cooperative named in the title. The article also tells something of the background and accomplishments of the association.

Farm cooperatives and farm women: A study of the knowledge and attitudes of farm women relative to cooperatives. By W. A. Anderson. Ithaca, N. Y., Cornell University Agricultural Experiment Station, Department of Rural Sociology, 1945. 36 pp. (Mimeographed bull. No. 16.)

Frozen food locker plants—location, capacity, rates, and use, January 1, 1943. By S. T. Warrington and Paul C. Wilkins. Kansas City, Mo., U. S. Department of Agriculture, Farm Credit Administration, Cooperative Research and Service Division, 1945. 45 pp., maps, charts. (Miscellaneous report No. 81.)

The report covers only the items shown in its title; no data are given as to membership, volume of business, or earnings. Of the 1,534 plants for which data on ownership were obtained for 1943, only 145 were owned by cooperatives.

Vultos do cooperativismo Brasileiro. (In Economía, São Paulo, December 1944, pp. 29, 31, 33.)

The article listed gives a brief account of the activities in the Brazilian cooperative movement of eight of its leaders. Other articles in this issue of Economía, which commemorates the hundredth anniversary of the founding of the consumers' cooperative movement, include historical information on and statistics of operation of cooperatives in several Brazilian States.

Cooperation in Canada in 1943. (In Canadian Cooperator, Brantford, Ont., September 1945, pp. 10–14.)

Annual report of Cooperative Union of Canada, showing a large expansion in cooperative business in that country, and a great increase in earnings. The report covers 248 retail associations operating stores, gasoline stations, or warehouses, 3 dairy associations, 4 Provincial wholesales, and several central productive and marketing associations.

Soviet cooperation: Official report of British delegation to the USSR, 1944. Manchester, England, Cooperative Union, Ltd., [1944]. 52 pp., illus.

Contains information regarding the various central cooperative organizations visited by the delegation, Soviet practice as regards cooperative principles, cooperative education and meetings, participation of women in the movement, and a number of phases of Russian life in general. The delegation returned with a most favorable impression of the Russian cooperative movement, its democratic control, and the participation of the members.

EDITOR'S NOTE.—Correspondence regarding the publications to which reference is made in this list should be addressed to the respective publishing agencies mentioned. Where data on prices were readily available, they have been shown with the title entries.

Employment

Bibliography on full employment. Report to the Senate Committee on Banking and Currency relating to S. 380 * * *, prepared by Legislative Reference Service, Library of Congress. Washington, Government Printing Office, 1945. 56 pp. (Committee print No. 2, 79th Cong., 1st sess.)

Full Employment Act of 1945. Washington, Government Printing Office, 1945. 1,259 pp., charts.

Hearings (revised edition), July 30 to September 1, 1945, before a subcommittee of the Senate Committee on Banking and Currency, 79th Congress, 1st session, on S. 380, a bill to establish a national policy and program for assuring continuing full employment in a free competitive economy, through the concerted efforts of industry, agriculture, labor, and Federal, State, and local governments.

International trade and domestic employment. By Calvin B. Hoover. New York, McGraw-Hill Book Co., Inc., 1945. 177 pp. (Committee for Economic Development research study.) $1.75.

The author proposes a seven-point program, including as a basic part of the program the carrying out of measures for maintaining a high level of domestic employment and at the same time collaborating in international economic policies to attain and maintain high levels of employment in other countries. This, he states, is the most essential element in the program.

Wartime changes in agricultural employment. Washington, U. S. Bureau of Labor Statistics, 1945. 10 pp. (Serial No. R. 1780; reprinted from Monthly Labor Review, September 1945.) Free.

Employment policy. London, Tory Reform Committee, [1945?]. 7 pp. (Bull. No. 2.)

Brief evaluation of the British White Paper on employment policy. Concludes that it was given less attention by the general public than its importance justified.

Employment conditions in Italy, 1944–45. Washington, U. S. Bureau of Labor Statistics, 1945. 10 pp. (Serial No. R. 1782; reprinted from Monthly Labor Review, September 1945.) Free.

Handicapped Workers

The training and employment of disabled persons—a preliminary report. Montreal, International Labor Office, 1945. 302 pp. (Studies and reports, series E, No. 7.) $1.50. Distributed in United States by Washington branch of ILO.

Comprehensive treatment of the major problems and logical processes in a public program for the occupational reestablishment of the disabled, with the official experience and best practices of various countries as guideposts. A selected list of pertinent laws, regulations, and official reports is appended.

Conference on the occupational readjustment of the disabled, London, February 17, 1945—report. London, National Institute of Industrial Psychology, 1945. 46 pp. 2s.

Papers presented at the meeting and summary of discussions.

The dynamics of mental hygiene in industry. By Matthew Brody, M.D. (In Mental Hygiene, Albany, N. Y., July 1945, pp. 371–384. 75 cents.)

A consulting neuropsychiatrist discusses in this paper the problems connected with employment of psychiatrically handicapped persons and the contribution to their proper placement that can be made by psychiatrists.

The physically impaired—a guidebook to their employment. New York, Association of Casualty and Surety Executives, 1945. 34 pp., bibliography.

Selective placement for the handicapped. Washington, U. S. Department of Labor, U. S. Employment Service, 1945. 136 pp., bibliography, forms. 25 cents, Superintendent of Documents, Washington.

Handbook for the guidance of U. S. Employment Service personnel in placing disabled applicants in competitive employment. The volume is divided into three parts: How to serve the handicapped; Specific disabilities and their evaluation; Physical demands analysis and physical capacities appraisal.

Should epileptics be employed? By Ethel M. Spears. (In Conference Board Management Record, National Industrial Conference Board, Inc., New York, July 1945, pp. 179, 180.)

Housing

Postwar economic policy and planning: Postwar housing. Report to [Senate] special committee on postwar economic policy and planning by subcommittee on housing and urban redevelopment, pursuant to S. Res. 33 * * *, August 1, 1945. Washington, Government Printing Office, 1945. 23 pp. (Committee print, 79th Cong., 1st sess.)

The first seven years: A report of the Housing Authority of the City of Pittsburgh for the years 1937–44. Pittsburgh, 1944. 63 pp., map, charts, illus.
Evaluates the housing situation in Pittsburgh and shows what the city's Housing Authority has done to remedy substandard conditions.

The Forum study of the house market conducted by Crossley, Inc. New York, Time Inc., 1945. 27 pp., charts. (Supplement to Architectural Forum, September 1945.)
Survey of the desires of families with regard to house building or buying, kinds of dwellings wanted, and effects that rising prices would have on purchases.

Housing manual, 1944. London, Ministry of Health and Ministry of Works, 1944. 103 pp., plans, illus. 2s. net, His Majesty's Stationery Office, London.
Guide to site planning and construction, including space and structural standards. Technical appendixes have been published in a separate volume (1s. 6d. net).

Our building inheritance—are we to use or lose it? By Walter H. Godfrey. London, Faber & Faber, Ltd., 1945. 87 pp., illus. 10s. 6d.
Deals with present British housing needs and use of the existing supply to the best national advantage.

Income

A graphical analysis of personal income distribution in the United States. By Mary Jean Bowman. (In American Economic Review, Menasha, Wis., September 1945, pp. 607–628; charts. $1.25.)
A study of consumer incomes, mainly for 1935–36, with emphasis on the techniques best adapted to the analysis of statistics of income distribution.

Income from wages and salaries in the postwar period. Washington, U. S. Bureau of Labor Statistics, 1945. 13 pp. (Bull. No. 845; reprinted from Monthly Labor Review, September 1945.) 5 cents, Superintendent of Documents, Washington.

State income payments in 1944. By Charles F. Schwartz. (In Survey of Current Business, U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, August 1945, pp. 10–19; maps. 20 cents, Superintendent of Documents, Washington.)
The types of payments shown are wages and salaries, proprietors' income, property income (dividends, interest, rent, etc.), and other income. Percentage distributions are given for total payments and for total nonmilitary income. Per capita income payments are included. Most of the tables cover selected years from 1929 to 1944. There is a discussion of the extent and the causes of the redistribution of income during the war and the factors tending to affect postwar distributions. It is concluded that the war period cannot be discounted as a distortion in that persistent underlying trends prevailed over 1929–44, embracing prosperity and depression, peace and war. Some readjustment of the 1944 geographic income pattern is anticipated, however, prior to the establishment of a more "normal" peacetime pattern.

Industrial Accidents and Accident Prevention

Accidents still take toll of young workers. By Miriam Noll. (In The Child, U. S. Department of Labor, Children's Bureau, Washington, August 1945, pp. 29–31. Reprints of article are available free from Children's Bureau.)
Includes statistics from nine States which show startling wartime increases in injuries to workers under 18 years of age.

Annual statistical number, Accident Prevention Magazine, Portland Cement Association. Chicago, August 1945. 15 pp., charts.
Shows accident experience of member companies of Portland Cement Association, 1940–44, covering quarries, mines, and clay fields, with some information for first half of 1945.

Accident prevention in the marketing and distribution of petroleum products. By Roy S. Bonsib. (In Industrial Safety Survey, International Labor Office, Montreal, April–June 1945, pp. 41–55; illus. 50 cents. Distributed in United States by Washington branch of ILO.)

Annual summary of injuries in the petroleum industry for 1944. New York, American Petroleum Institute, Department of Accident Prevention, 1945. 19 pp., chart.

Industrial Hygiene

Atmospheric conditions in cotton textile plants. Washington, U. S. Department of Labor, Division of Labor Standards, 1945. 18 pp., bibliography, illus. (Special bull. No. 18.) Free.

Control of health hazards in the industrial handling of chemicals. (In Industrial Bulletin and Employment Review, New York Department of Labor, Albany, June 1945, pp. 207–217; bibliography, illus. 10 cents.)

Memorandum on carbon monoxide poisoning. London, Ministry of Labor and National Service, Factory Department, 1945. 32 pp., illus. Rev. ed. 6d. net, His Majesty's Stationery Office, London.

Regulations and orders relating to safety and health [in coal mines], 1945 edition. London, Ministry of Fuel and Power, 1945. 200 pp. 2s. net, His Majesty's Stationery Office, London.

Use of salts to allay dust on shuttle-car roadways in coal mines. By Edward Thomas and Irving Hartmann. Washington, U. S. Department of the Interior, Bureau of Mines, 1945. 15 pp., charts; mimeographed. (Report of investigations No. 3828.)

Industrial Relations

Government mediation and arbitration of labor disputes. Princeton, N. J., Princeton University, Industrial Relations Section, November 1945. 4 pp. (Selected references, No. 6.)

Labor contract clauses in the automotive and aviation parts manufacturing industry. Compiled and edited by Malcolm W. Welty. Detroit, Mich., Automotive & Aviation Parts Manufacturers, Inc., 1945. 488 pp.
Arranged in the order followed by most union-management agreements are copies of clauses taken from about 200 current agreements covering employees in the automobile, aircraft, and parts plants. The detailed table of contents and the index facilitate finding the various types of provisions.

Techniques in the negotiation of the labor contract. Princeton, N. J., Princeton University, Industrial Relations Section, September 1945. 4 pp. (Selected references, No. 5.)

Labor Legislation and Court Decisions

Court decisions on teacher tenure reported in 1944. Washington, National Education Association of the United States, Committee on Tenure and Academic Freedom, 1945. 24 pp. 25 cents.

Laws against discrimination [in employment, Connecticut]. Hartford, Connecticut Inter-Racial Commission, 1945. 11 pp. Rev. ed.

State constitutional amendments, 1944, and initictive and referendum measures. Chicago, Commerce Clearing House, Inc., 1945. 150 pp. $2.
Texts of all constitutional amendments and initiative and referendum measures adopted by the electors during 1944, with summaries of defeated measures. Several measures deal with labor and a number with social security, principally pension plans.

The Supreme Court and organized labor, 1941–45. By E. Merrick Dodd. (In Harvard Law Review, Cambridge, Mass., September 1945, pp. 1018–1071. 75 cents.)

Reviews the U. S. Supreme Court's labor-union decisions during the period covered.

Control of engagements, [Great Britain]. By Ministry of Labor and National Service. London, Ministry of Information, 1945. 8 pp. (Reference booklets for editors, No. 4.)

History of wartime legislation on control of engagement of workers, and a summary of the 1945 Control of Engagement Order with questions and answers on its provisions.

Derecho mexicano del trabajo. By Mario de la Cueva. México, D. F., Librería de Porrúa Hnos. y Cía., 1943. 746 pp., bibliographies.

Gives the status of labor law in Mexico (with historical background of the theory and practice of such law in other nations from ancient times) covering the pertinent phases of work contracts, with separate sections on days of rest, vacations, protection of women and minors, and wages.

Labor Organizations and Conferences

Directory of labor organizations in the Territory of Hawaii. Honolulu, Department of Labor and Industrial Relations, Bureau of Research and Statistics, September 1, 1945. 12 pp.; mimeographed. (No. 7.)

William Sylvis, pioneer of American labor. By Jonathan Grossman. New York, Columbia University Press, 1945. 302 pp., bibliography. (Columbia University studies in history, economics, and public law, No. 516.) $3.50.

The author traces the growth of American trade-unionism during the Civil War period through this biography of William Sylvis, third president of the International Molders' Union and second president of the National Labor Union, an early federation of unions. Some of the major developments depicted in which Sylvis played a leading role include the cooperative movement and the activities of the unions in the field of political reforms affecting labor.

A short history of the Australian labor movement. By Brian Fitzpatrick. Melbourne, Rawson's Bookshop, 1944. 221 pp. 4s. 6d.

Carries the history from the period before the gold rush (in the 1850's) to 1944.

Le mouvement des unions professionnelles, [Belgium], (fin 1943). (In Revue du Travail, Ministère du Travail et de la Prévoyance Sociale de Belgique, Brussels, April–May 1945, pp. 237–243.)

Statistics show number of unions and their membership, by industry and occupation, and financial operations, in 1943. Summary data are given for 1913 and for each year from 1936 to 1943.

Proceedings and reports of General Federation of Trade Unions, [Great Britain], from June 1944 to June 1945. London, 1945. Variously paged.

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Activities of an experimental rural health program in six counties during its first fiscal year, 1942–43. By Jesse B. Yaukey. Washington, U. S. Department of Agriculture, Farm Security Administration, 1945. 65 pp., charts; mimeographed.

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Experimenting in rural health organization. By James E. Montgomery. (In Rural Sociology, Raleigh, N. C., September 1945, pp. 296–308. 75 cents.)

Analysis of an experimental medical-care program established in Newton County, Miss., by the U. S. Department of Agriculture, and of its results, especially as related to the requirements of a national health program. Health needs and facilities prior to the experimental program are also covered.

Health-benefit programs established through collective bargaining, 1945. Washington, U. S. Bureau of Labor Statistics, 1945. 19 pp. (Bull. No. 841; reprinted from Monthly Labor Review, August 1945.) 10 cents, Superintendent of Documents, Washington.

Health insurance in the textile dyeing, finishing, and printing industry: Report covering one year's experience under a union-negotiated industry-wide insurance program, January to December 1944. Paterson, N. J., Federation of Dyers, Finishers, Printers and Bleachers of America, 1945. 15 pp.; mimeographed.

Description of the program and statistics of claims and of benefits paid in 1944 to union members and their dependents under this new plan.

The Rhode Island cash sickness compensation program: A pioneer venture in social security. By Mortimer W. Newton. (In State Government, Chicago, September 1945, pp. 156–159, 161. 35 cents.)

Recent account of the working of the program, with fiscal statements through June 30, 1945, by the chairman of the administering agency, the State Unemployment Compensation Board.

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Analysis of State minimum-wage orders (effective dates July 1942—August 1945). Washington, U. S. Department of Labor, Women's Bureau, 1945. 28 pp.; mimeographed. (Supplement to Bull. No. 191.) Free.

Summary of statistical materials bearing on proposals for revising the minimum-wage provisions of the Fair Labor Standards Act. New York, U. S. Department of Labor, Wage and Hour and Public Contracts Divisions, Economics Branch, September 1945. 63 pp.; mimeographed. Free.

State minimum-salary standards for teachers, 1944. Washington, National Education Association of the United States, Committee on Tenure and Academic Freedom, 1944. 75 pp., bibliography. 50 cents.

El salario mínimo—zonas, entidades federativas y municipios, bienio 1944–1945. México, D. F., Secretaría de la Economía Nacional, Dirección General de Estadística, 1945. 21 pp.; mimeographed.

Describes operation of Mexican minimum-wage law and lists minimum wages for the various States, 1934–45.

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Careers in business for women. By Dorée Smedley and Lura Robinson. New York, E. P. Dutton & Co., Inc., 1945. 224 pp., bibliography, illus. $2.75.

500 postwar jobs for men. By Vocational Guidance Research. Garden City, N. Y., Doubleday, Doran & Co., Inc., 1945. 285 pp. $2.50.

Government jobs and how to get them. Edited by Sterling D. Spero. Philadelphia and New York, M. B. Lippincott Co., 1945. 358 pp. $2.95.

Part 1 gives information about 500 Federal Government jobs, and part 2, facts about Government employment, including working conditions and how to get a job under the merit system, with sample examination questions and answers.

Employment outlook for automobile mechanics. Washington, U. S. Bureau of Labor Statistics, 1945. 18 pp. (Bull No. 842.) 10 cents, Superintendent of Documents, Washington.

Employment opportunities in aviation occupations: Part I, Postwar employment outlook. Washington, U. S. Bureau of Labor Statistics, 1945. 36 pp. (Bull. No. 837–1; reprinted from Monthly Labor Review, April and June 1945.) 10 cents, Superintendent of Documents, Washington.

Employment opportunities for welders. Washington, U. S. Bureau of Labor Statistics, 1945. 19 pp. (Bull. No. 844; reprinted from Monthly Labor Review, September 1945.) 10 cents, Superintendent of Documents, Washington.

Job descriptions for office occupations. Washington, U. S. War Manpower Commission, Division of Occupational Analysis, 1945. 204 pp. $1.25.

Recent occupational trends in American labor. By Dewey Anderson and Percy E. Davidson. Stanford University, Calif., Stanford University Press, 1945. 133 pp. $2.25($1.50 with paper cover).

A supplement to "Occupational trends in the United States," published in 1940, which described forces at work in our national life that are reflected in census occupational reports and in researches into the nature and effects of changes in the supply of and demand for workers. The supplement makes use of 1940 census data and of additional material relating to wartime and postwar employment.

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Agricultural price control. By Geoffrey S. Shepherd. Ames, Iowa State College Press, 1945. 361 pp., charts.

Historical study with emphasis on price "floors" as distinguished from price "ceilings." Methods of price control discussed by the author include the control of market supplies and the control of the demand for farm products. One of the four main sections of the volume deals with the problem of controlling agricultural prices after the war.

Inflation dangers didn't end on VJ-day. By C. H. Herbert, Economic Adviser, Wartime Prices and Trade Board of Canada. [Toronto], Canadian Association for Adult Education, 1945. 16 pp., charts.

Shows price movements in past wars and points out the need for continuing controls as long as goods are scarce.

Typical residential electric bills—typical net monthly bills as of January 1, 1945, cities of 2,500 population and more. Washington, Federal Power Commission, 1945. 61 pp., maps, charts. 25 cents.

Report of the Inter-Departmental Committee on Rent Control, [Great Britain and Scotland]. London, Ministry of Health, and Department of Health for Scotland, 1945. 63 pp. (Cmd. 6621.) 1s. net, His Majesty's Stationery Office, London.

Reviews rent-control measures and advises on legislative changes.

Production and Productivity of Labor

American industry in war and transition, 1940–50: Part II, The effect of the war on the industrial economy. Washington, U. S. War Production Board, Program and Statistics Bureau, 1945. 56 pp., charts; processed. (Document No. 27.)

Covers the wartime expansion of industrial production with respect to facilities, materials, labor supply, and productivity, the attendant financial situation, and major changes in the pattern of production.

Wartime productivity changes in the airframe industry. Washington, U. S. Bureau of Labor Statistics, 1945. 11 pp., charts. (Serial No. R. 1776; reprinted from Monthly Labor Review, August 1945.) Free.

Productivity of labor in the cotton industry. By L. Rostas. (In Economic Journal, London, June–September 1945, pp. 192–205. 7s. 6d. net.)

Analysis of the report of the British cotton-textile experts who visited the United States in 1944 to ascertain differences in productivity of labor in the cotton industry in the two countries.

Productivity and unit labor cost in the telephone and telegraph industries, 1935–44. Washington, U. S. Bureau of Labor Statistics, 1945. 5 pp.; mimeographed. Free.

Experiments on the effects of music on factory production. By Willard A. Kerr. Stanford University, Calif., Stanford University Press (for American Association for Applied Psychology), 1945. 40 pp., bibliography, charts. (Applied psychology monograph No. 5.) $1.

The author summarizes earlier experiments by other investigators and describes the somewhat detailed recent experiments conducted by the company with which he is connected. The findings indicate an increase in average output due to music, doubtful effects on quality of output, and increased "net good yield" when rejected output is taken into account.

Increased production. [Melbourne?], Institute of Public Affairs—Victoria, [1945?]. 48 pp. (A "Looking forward" publication.)

Urges maximum efficiency or productivity as a necessary accompaniment to full employment and social security in bringing about prosperity in Australia.

Social Security (General)

Company group insurance plans. New York, National Industrial Conference Board, Inc., 1945. 31 pp. (Studies in personnel policy No. 70.)

Study of 189 new group-insurance plans, analyzed by type of benefit and principal provisions. Cost, administrative problems, and industry experience with group insurance are discussed, as well as the attitudes of the U. S. National War Labor Board and organized labor in this connection. A tabulated summary of 48 plans is included.

Selected information on public assistance. (In Social Security Bulletin, Federal Security Agency, Social Security Board, Washington, June 1945, pp. 24–29. 20 cents, Superintendent of Documents, Washington.)

Analysis of provisions and operations of the State public-assistance programs as to eligibility, amount of assistance given, and other basic considerations, under the Federal Social Security Act.

El seguro social, su desarrollo en Costa Rica. By Enrique Muñoz Fonseca. San José, Trejos Hermanos, 1944. 129 pp., bibliography.

Examines the development of the social-security system of Costa Rica, the various laws that have implemented it, and its possible place in the national economy of the country. A brief historical survey of the social-security movement in other countries is included.

Ley del seguro social obligatorio. [Quito], Imp. Caja del Seguro, 1943 and 1944. 67 pp.

Text of the Ecuadoran compulsory social-security law of 1942, with appendixes giving enabling decrees of March and August 1944.

The New Zealand social security program. By Jacob Fisher. (In Social Security Bulletin, Federal Security Agency, Social Security Board, Washington, September 1945, pp. 3–11. 20 cents, Superintendent of Documents, Washington.)

Description of the social-security system of New Zealand and an evaluation of its significance. The conclusion is reached that universality of risk and of population coverage is administratively feasible and that experience thus far does not show that the cost is an excessive burden on the national economy.

Memorandum on the policy and activities of the Department of Social Welfare, [Union of South Africa], for the period January 1, 1944, to December 31, 1944. Pretoria, 1945. 15 pp. 2s.

Analyzes operations in the field of welfare under such heads as maternal and child welfare and services relating to housing.

Wages and Hours of Labor

Salary rates of officials in 159 Oregon cities. Eugene, Oreg., University of Oregon, June 1945. 17 pp.; mimeographed. (Information bull. No. 61.)

Data are presented by city for all classes of municipal employees from street laborers to mayors. Populations of the cities included in the survey range from under 500 to over 300,000 (Portland only).

Trends in urban wage rates, October 1944 to April 1945. Washington, U. S. Bureau of Labor Statistics, 1945. 11 pp. (Bull. No. 846; reprinted from Monthly Labor Review, September 1945.) 5 cents, Superintendent of Documents, Washington.

Union scale of daily wage rates, [Palestine]. (In General Monthly Bulletin of Current Statistics, Department of Statistics, Jerusalem, June 1945, pp. 360–363. 4s.)

Daily wage rates prevailing in manufacturing industries and construction in Jerusalem, Tel-Aviv, and Haifa at the end of March 1945, based on an 8-hour workday.

Youth Problems

Farm labor camps and city youth. By W. A. Anderson and Irving A. Spaulding. Ithaca, N. Y., Cornell University Agricultural Experiment Station, 1945. 27 pp., map, illus. (Bull. No. 819.)

Presents facts and suggestions concerning organization and management of farm labor camps for city youth. The study covered 15 camps in the State of New York in 1943.

Which jobs for young workers? No. 12, Advisory standards for foundries; No. 13, Advisory standards for the brick and the tile industry; No. 14, Advisory standards for the converted paper-products industries. Washington, U. S. Department of Labor, Children's Bureau, 1945. Folders. Free.

London Regional Advisory Council for Juvenile Employment survey for 1943 and 1944. London, Ministry of Labor and National Service, 1945. 8 pp.; mimeographed.

Discusses developments with respect to wartime employment conditions and also recruitment and training problems. Statistics of juvenile unemployment are given for selected wartime periods.

General Reports

The impact of war on the Hampton Roads area, the Norfolk-Portsmouth-Newport News shipbuilding district: Part I, World War II; Part II, World War I. Washington, U. S. Bureau of Labor Statistics, 1944. 131 and 71 pp., map, charts; mimeographed. (Industrial area study No. 23 and Historical study No. 69.) Free.

Labor in California, 1943–44. San Francisco, Department of Industrial Relations, Division of Labor Statistics and Law Enforcement, 1945. 111 pp.

Major subjects covered include population and labor force, employment trends, women in industry, income payments, hours and earnings, cost of living, union labor, industrial disputes, industrial injuries, and operations of private employment agencies.

Review of Bahamian economic conditions and postwar problems. By J. Henry Richardson. Nassau, Nassau Guardian, Ltd. (printer), 1944. 150 pp.

In directing attention to the main economic problems of the colony, the economic adviser to the Bahamas Government treats such matters of interest to labor as the main occupational changes in the population, 1921–43; standards of living; and employment, wages, and cost of living at the beginning of 1944.

Brazil 1943—resources and possibilities. Rio de Janeiro, Ministry of Foreign Affairs, [1944]. 630 pp., maps, charts, illus. (In English.)

Contains information on number of workers and production in specified industries, labor organization, social insurance, labor courts, minimum wages, industrial accidents, and low-cost restaurants for workers, for various years down to 1941. The development of labor and social legislation is summarized.

Statistical abstract [for Ireland], 1944. Dublin, Department of Industry and Commerce, 1944. 204 pp., charts. 3s. 6d.

Includes statistics of agricultural and industrial production, housing, unemployment and unemployment insurance, industrial disputes, prices, and wages. The data on prices and wages are brought down to 1944; on the other topics mentioned the figures are for earlier years.

Labor conditions in Japan. Washington, U. S. Bureau of Labor Statistics, 1945. 18 pp. (Serial No. R. 1788; reprinted from Monthly Labor Review, October 1945.) Free.

Statistical report on prices, wage rates and hours of labor, unemployment, industrial accidents, etc., for the year 1942, with a statistical summary for the Dominion [of New Zealand] from 1890 to 1942. Wellington, Census and Statistics Department, 1945. 98 pp. 5s.

Two studies in the statistics of Russia: Part I, The progressiveness of Russia before 1917; Part II, Soviet standards of living before the war. By W. H. Hutt. (In South African Journal of Economics, Johannesburg, March 1945, pp. 18–42. 6s. net.)

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